HOUSE OF COMMONS

Business and Trade Committee

Oral evidence: Batteries for electric vehicle manufacturing, HC 1070.

Tuesday 9 May 2023

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Watch the meeting

Members present: Darren Jones (Chair); Jane Hunt; Ian Lavery; Andy McDonald; Mark Pawsey.

Questions 1 – 34

Witnesses

I: Simon Moores, Chief Executive, Benchmark Minerals Intelligence; Jeff Townsend, Founder, Critical Minerals Association; Jeremy Wrathall, Founder and Chief Executive, Cornish Lithium Limited; Paul Lusty, Director, UK Critical Minerals Intelligence Centre.

Examination of Witnesses

Witnesses: Simon Moores, Jeff Townsend, Jeremy Wrathall and Paul Lusty.

Q1 **Chair:** Welcome to this afternoon's session of the Business and Trade Committee for our first oral evidence hearing on the manufacturing of batteries and the automotive sector in the UK. We have two panels today. In our first panel, I am delighted to welcome Jeff Townsend, who is the founder of the Critical Minerals Association; Simon Moores, who is the chief executive of the Benchmark Mineral Intelligence group; Jeremy Wrathall, who is the founder and chief executive of Cornish Lithium; and Paul Lusty, who is the director of the UK Critical Minerals Intelligence Centre. Thank you to all of you for coming in today.

My first question to kick us off is going to come to you, Simon, in the first instance, and then I will open up to others. Simon, in your evidence to us, you were quite punchy and said that the UK is a bystander in the global battery arms race and that there is a land grab for the critical minerals to fuel it. Are we already too far behind or can we catch up?

Simon Moores: We can catch up, most definitely. We are very far behind. This global battery arms race and this buildout of lithium ion batteries for electric vehicles and for energy storage began in earnest in 2015. It really then took off outside of China, Japan and Korea in 2018. The US has really got its act together with the Inflation Reduction Act, so we are seeing it push ahead with battery plants and the supply chains to fuel them.

At the moment, the UK does not have a strategy. It does not have a runner in this race. It can talk about electric vehicles and about being involved in energy storage, solar and wind, but unless you are making batteries here and you have the chemical plants to fuel those batteries—the midstream of the supply chain—you are not involved in the industry or in this energy storage revolution.

In summary, the UK acting now is for 2030 and beyond. Provided the Government get a strategy together and help with the money to attract players here, we are good from 2030 and beyond. Up until that point, it is going to take that long to build the supply chain.

Q2 **Chair:** By "a runner in the race", do you mean the whole supply chain and not just a factory that puts things together?

Simon Moores: Yes. You need joined-up thinking here. The supply chain is now at the top of the agenda, no matter what industry you are in with Government involved. When you build a battery plant or a gigafactory, it takes the equivalent of one mine's worth of lithium, nickel, cobalt, graphite and manganese. If you do not have these five core critical minerals, you cannot make a lithium ion battery. It is not necessarily just about building the mines here—certainly, we need mining knowledge and capacity within the UK—but about making sure that, when you build a gigafactory, you have the critical mineral supply deals, the contracts and

the partners in place to see the lithium ion in the ground go all the way through to that battery plant. That is really the crux of this global battery arms race. It is not just about making cells. It is about the whole supply chain.

Q3 **Chair:** Jeremy, we are always quite interested in this Committee about the impact of American subsidies in the Inflation Reduction Act and other initiatives being put forward in America. You cannot just take the lithium in Cornwall, move it to America and deal with it there, so it does not affect your industry in quite the same way, but what are you seeing are the implications of subsidy and intervention from the Americans and elsewhere on your ability to mine lithium in Cornwall?

Jeremy Wrathall: The implications of the Inflation Reduction Act and those subsidies are that they will attract capital to the US and to Canada rather than that capital coming here. It is far more advantageous to build a lithium supply chain in the US when some of the capital is put up by the Government. Geology is fixed and we cannot transport it. It is not so much about the ability but more about the capital to do it. Capital is far more incentivised to go to the US.

Q4 **Chair:** That is because the business case tends to be stronger for their return on investment, taxes, access to low-cost finance and things.

Jeremy Wrathall: Yes, absolutely.

Q5 **Chair:** Jeff, the Government said to us, "It is not feasible nor desirable to onshore all elements of the supply chain", which probably makes sense. What should we be doing in the UK that we are not doing right now?

Jeff Townsend: That is a really good question. We cannot do everything. The geology determines what we can do in the upstream. We have projects like Cornish Lithium that we absolutely need to get off the ground, because, if you want strategic supply, that is where it is. It is in your country. We need to win that midstream race and we are seeing a regionalisation of that midstream competitiveness.

We should do more closer to the mines, wherever that may be, because it is important. It shortens supply chains and decreases carbon footprints. As we get further down towards the downstream, we need to see more of that midstream in the UK, so the likes of Green Lithium, Tees Valley Lithium and other lithium producers here, but also other midstream across the board, whatever critical mineral space it is. That is something that we are not doing enough of yet.

Going back to what Simon said on IRA, capital and Government investment de-risking this is absolutely key. There are a number of ways that they can do that, but, if I am a producer with a refinery and I can do it in the UK or the EU, and the EU is going to give me 20% of my OpEx, where do you think I am going to place myself?

Q6 **Chair:** We have talked a little about the midstream here and the refining

and processing that needs to be done. The UK has quite a lot of strength and history in the chemicals industry. Why are we not making more of that at the moment? Is it just the same case around investment?

Simon Moores: Traditional economic models do not work in this. This is a brand new industrial revolution. You cannot expect to build the downstream and have the midstream and the upstream happen. You cannot build the upstream and expect the downstream to happen. You have to build all of it, all at once.

It is very easy to go and talk about gigafactories. They are easy to sell. They are easy to explain. It is very hard to start talking about chemically difficult things, often in places where there are lower incomes, and say, "This is what we need and it is imperative that we have this in the UK as a means of developing the entirety of the supply chain". How do you get an entire supply chain that could be 3,000 stages long, spread across the world, into a 30-second soundbite? It is impossible.

We do have a great chemical sector. We should be using that more. We have good industrial sites. We have freeports. We could be doing more there. Ultimately, until we have energy prices that compete with the EU, so this regional competitiveness, we are always going to be at a disadvantage.

Q7 **Chair:** Paul Lusty, welcome back to the Committee. You gave evidence to us before about the Government's critical minerals strategy. In terms of the critical minerals that we need to make batteries, I think I am right in saying that we would not have everything that we need in the UK, so we are going to have to do partnerships with Australia, Canada and, presumably, the European Union. What are our strengths in the UK? What do we have here domestically that we should be making the most of and what are the things for which we are going to have to rely on partners?

Paul Lusty: You are absolutely right. We have elements of what you might describe as an emerging lithium ion value chain in the UK. There is ongoing exploration, particularly in south-west England, primarily focused on lithium resources with potential for near to mid-term development from both brines and hard rock deposits. There is also exploration for nickel mineralisation in Scotland.

We have a limited amount of lithium refining capacity already in the UK, and there are several companies, some of which are represented here in the room, looking to build out midstream lithium refining capacity in the UK, capitalising on potentially low-carbon energy sources and the hydrogen economy in parts of the country.

We have nickel refining capacity in south Wales. That is not currently being exploited in terms of the production of nickel sulphate to feed into a lithium ion battery value chain.

In terms of opportunities for the UK, we do need to identify those areas for priority interventions. We are a world class producer of needle coke, which is a precursor for anode material for lithium ion batteries, but the vast majority of that material is currently exported overseas, primarily to China. That is a classic example of an area where there is an obvious potential for development of part of the UK lithium ion battery chain, which could bring more value into the UK economy.

Q8 **Andy McDonald:** Paul, how confident are you that there is sufficiency of supply of critical minerals for the vehicles that are either built or sold here?

Paul Lusty: I do not think that we can currently be confident that we are going to be able to fulfil the raw material demand requirements of the UK for building out gigafactories. We do not have any established cathode active material plants planned for the UK. That material is a prerequisite for building lithium ion battery cells.

If you look at the geopolitical landscape—and people have alluded to the rate at which the US and some European countries are now moving in this space—it is extremely competitive. Because of our lack of domestic production capability, we are currently almost entirely dependent on imports, so we are competing in the international market with many other countries that are also looking to transition to net zero.

While there are opportunities for the UK, we are also starting to see significant deficits in some battery raw material markets, and those that are moving into slight surplus now are also remaining very tight. Again, that means that there is significant competition in the market for those materials.

Q9 **Andy McDonald:** We have our UK critical minerals strategy. Does that properly address this issue around sufficiency?

Simon Moores: Not yet, no. The critical minerals strategy needs to be driven by an industrial strategy to build electric vehicles and battery plants here. One gigafactory is the size of a football stadium. We need at least four of them. That is about £20 billion worth. It does not all need to come from the Government; £15 billion can come from industry, but that £20 billion unlocks the opportunities for the rest of the supply chain. It unlocks the electric vehicle industry here in the UK.

Just touching on what Paul said, there is no problem geologically with these raw materials. It is about getting them out of the ground quickly enough. It is about 10-year horizons to plan for this. In planning for gigafactories, the UK has missed the boat on the first round. It has probably missed the boat on the second round of supply of these critical minerals. We have to make sure that we do not miss the boat on the third and probably final round, and that is 2030 onwards.

Q10 **Andy McDonald:** What happened for us to miss the boat so badly on those two occasions? Where were we as a nation?

Simon Moores: We did not build battery plants.

Andy McDonald: We just did not do it.

Simon Moores: You have to question what the automotive companies in the UK are doing here. What are the big chemical companies in the UK doing here? They were not plugged into batteries when China was, when Japan was, when Korea was, when the US was and when the European Union was. What were the big UK automotive companies doing? What were the big chemical guys doing? What is INEOS doing? It is not even talking about lithium ion batteries as a serious multibillion pound industry, when that is exactly what it is for everybody else in the world. That is the key. That is the crux for me.

Q11 **Andy McDonald:** The Government have told us that we have pockets of mineral wealth. To what extent do we have those supplies in the UK?

Jeff Townsend: We do have pockets of mineral wealth, and Paul and his team have identified eight across the UK, but they are not sufficient to deliver the minerals that we require. It is not just lithium. In the south-west, you have tin and tungsten. You have nickel up in Scotland and copper in Northern Ireland. There are areas that we have, but they are not sufficient.

Therefore, we need to go and secure minerals globally from nations that have good geology. The problem is that they are tied into agreements now and sending almost everything to China, where the midstream is globally. China has the absolute monopoly, so this is not a free market. The Government have consistently said that we do not want to disrupt free markets. This is not a free market globally. This is a geopolitical, monopolised market. You only have to look at the legislation that China passed in 2020 that could allow it to stop exports of critical minerals to countries or companies that were against its national interest, so we have that situation to deal with.

Paul Lusty: On domestic production, the key point to recognise is this major disconnect between the time it takes to bring new supply online in terms of mining and refining capacity, because of the development timescales, relative to the time it takes to build out industrial gigafactory capacity. On average, globally, it is probably in the order of about 10 years to bring a new mining operation online, if not in excess of that, and that is if permitting goes very smoothly. We have this major disconnect between supply and demand.

Q12 **Andy McDonald:** This is a layperson asking, so I just want you to put me out of my misery. I have been hearing about the spoils of oil and gas exploration and the lithium deposits that are produced as a result of that. I assume that it is small beer and not particularly relevant, but can you just finish it off for me?

Jeremy Wrathall: Small beer here in the UK?

Andy McDonald: Yes.

Jeremy Wrathall: I do not think that that is correct. We have an opportunity. For one thing, some historical work was done by the BGS, which outlined the fact that St Austell granite in Cornwall is the biggest lithium deposit in the whole of Europe. There is no doubt about that. How much of that you can mine is a different question, but it is the biggest. We also have what is rapidly emerging as a potentially large-scale brine opportunity in the UK. It is at a relatively early stage, but it is here and it is geologically very special, so we do have some opportunities here.

The difficulty, as ever—and, as a former investment banker, I am probably qualified to say this and have turned on this all my career—is raising money for an industry in the UK, when the odds are stacked against you. Given the incentives in the US and everywhere else in the EU, while not impossible, it is very difficult. The critical minerals strategy is great, but it is a wish list with no substance in terms of finance.

Simon Moores: From a global perspective, it is a lithium land grab, as I said in the written evidence. That means that, with lithium prices where they are now and where they are going to be in at least 10 years and beyond, everything is in play. Every deposit with lithium in is in play, and the rest of the world is rushing to explore for it, develop for it and put it into production. That includes oilfield brines, as well as all the other traditional sources of lithium. While it is not a rare element, the hardest thing is putting money in the ground to get it into the supply chain, and that takes a while because it is a speciality chemical, not a commodity.

Q13 **Andy McDonald:** What do Government need to do to scale up? What support do companies need to scale up for the supply of battery minerals to come onstream?

Jeff Townsend: It is quite a simple answer, to be honest with you. It is to financially support the critical minerals strategy. The strategy and the refresh are good. Look at where the Government have gone from in 2020, with someone in Parliament saying that there was no critical mineral problem, to where we are now. We have a very active Minister, but, without the money to back it up, it is just words. Not since Genesis 1:3 has anyone said something that actually happened. The reality is that we need to back this.

It is just shy of £1 trillion on the current amount to deliver every single gigafactory that the world says it requires. Simon has the figures on what that would be in the UK. We need the Government to start helping financially support these projects. That means from the upstream, so those projects that are strategically important, through to the midstream, which is a battle that we need to win, and all the way down into supporting gigafactories.

The gigafactories are a very small part, and there are ways that the Government could do that without spending much money. You could underwrite offtake agreements, which would be a relatively cheap way of

doing it. You could introduce flow-through shares, which would be a good way of financing smaller exploration. There are ways that it can be done, but, without the finance, why and how do we compete with our friends/competitors?

Jeremy Wrathall: What Jeff just said is absolutely right. It is not about saying, "Stand back. We do not quite know what is happening here. We are not sure whether we are determined to build this". It is about being seen to be serious. The US is now seen to be very serious and has backed it with finance. The EU is seen to be very serious and has backed it with finance. The Chinese planned this decades ago, so they do not really need to be seen, because they have already dominated the industry.

The UK has an awful lot to offer in terms of chemical engineering—or engineering, full stop—and innovation. We are finding that with what we are doing in trying to build this out in Cornwall. Once the UK industry wakes up, with a Government lead to say, "We are serious. We have what it takes", there are some really clever people out there who suddenly wake up and say, "We can do that. It is not a problem". We have companies that have spun out of Manchester University and Oxford University, which have woken up to the imperative and are trying to do it, but the Government are almost hanging back.

Q14 **Andy McDonald:** The EU has its critical minerals Act, which sets out the benchmarks. Should we be doing something similar here? Is there a need for that?

Jeremy Wrathall: In my view, there absolutely is. That is what I mean by being serious. The EU has said that 10% of the material that goes into batteries must be sourced in the EU. That is laying down the law. We have laid down the law that, by 2030 to 2035, all vehicles have to be zero emission, but we have not followed that through with what UK industry needs to do to get there.

Simon Moores: On that point, it is not just about building a new industry; it is about saving the mainstream auto industry. The technology shift in electric vehicles is so aggressive. It has been for the last eight years, but especially in the last three years. In the UK, we have hesitated and missed it, and the rest of the world is producing. China certainly is. The US is about to increase its electric vehicle output, backed with American-made batteries, and the supply chain will follow afterwards. It is just that we have not done any of that yet.

Q15 **Andy McDonald:** We have a number of agreements with countries for the supply of raw materials—South Africa, Saudi Arabia, Canada and Australia. Are there any other countries with which we should be seeking to prioritise partnerships in pursuit of this? Is there anybody else that we should be looking to?

Simon Moores: For lithium, the big ones are Australia, Chile and Argentina. For nickel, the big one is Indonesia. In 10 years' time, 65% of

nickel will come from Indonesia; 50% already comes from there, and it is rising. It is Chinese money that has been increasing supply there. Graphite is everywhere but it is about investing in the deposits that are near-term production to get that material to make anode for the batteries.

The key thing is that the UK does not have to just do the deals itself. It has to attract the midstream of the supply chain—the big companies that build these battery plants and the cathode and anode plants in the middle—to then give them enough incentive to go and get those raw materials themselves.

If it is a Government-backed contract, for example, the lithium from now until 2030 onwards is up for grabs. Pretty much all of it is gone up until 2030. I know of major lithium companies that would do UK Government-backed contracts to then entice the midstream to come and set up here. It is that incentive that you need. Otherwise, they will say that building a battery plant in the EU is much more attractive. Building one in North America is definitely much more attractive. It is about using not just money but also supply chain incentives to build this industry here.

Q16 **Mark Pawsey:** I am hearing a pretty bleak picture at the minute, but I want to understand the importance of processing the minerals that you are talking to us about in the UK. One of our witnesses—I think it was Jeff—said that it made greater sense to process the minerals at the point where they are brought out of the ground, because there is less transportation involved in the finished products. Of the minerals that are needed, I am hearing that lithium is the one that is most abundant in the UK, where we have probably the greatest possibility of doing that, but how practical is it going to be, Jeremy, to get this out of the ground and process it here in the UK, so that we have a marketable product?

Jeremy Wrathall: We consider that it is going to be very practical. The Faraday Institute and the automotive transformation centre have stated that the UK needs 80,000 tonnes of lithium carbonate equivalent by 2030. We are not going to be able to produce that much.

Q17 **Mark Pawsey:** Presumably, it needs that only if we have the battery factories to use it, and we have not even dug in the ground yet, have we?

Jeremy Wrathall: Absolutely, that is the problem. If we want to maintain our automotive industry and build batteries, we need that much lithium. Can we process it? Yes, we can. We are working, as I said, with a number of British companies and have tested our brines from Cornwall all over the world. Absolutely nobody has said that it cannot be done.

Q18 **Mark Pawsey:** With the greatest respect, nobody saying that it cannot be done is a little different from everybody saying that it can be done. It depends on how positive you are.

Jeremy Wrathall: They are all saying that it can be done, and I am saying that it can be done. From our work it can be done. We are already doing that in Cornwall right now.

Q19 **Mark Pawsey:** Would the resources that you have access to meet the UK's need only or do you have a product that you can then sell to other battery manufacturers around the world?

Jeremy Wrathall: If there is no demand in the UK, we will sell it abroad.

Q20 **Mark Pawsey:** If there is demand in the UK, the resources that you have would simply serve the UK market. It would not be exported.

Jeremy Wrathall: It would not fulfil all the demand if there is ambition. Every tonne that we can produce here is a tonne that we do not have to import.

Q21 **Mark Pawsey:** Jeff, let us say that Jeremy's product starts coming out of the ground and is available for use here in the UK. There are other products, which you painted a pretty difficult picture on, that have been monopolised by other countries. If we get Jeremy's material, are we going to be able to easily get the other materials as well?

Jeff Townsend: There are multiple questions in there. First, if we do not get Cornish Lithium or some of these front-running companies up and running, what message are we sending to the world? It is not an if. It is an absolute must. We must do this.

Secondly, as Simon said, we are late to the game and we are not as attractive as our friends/competitors like the US or the EU at the moment. We can go and build relationships. We have done one recently with Kazakhstan, but so have six other nations. It is the same with South Africa. It is not that we are outliers and have been really clever. It is that we have matched what other nations are doing.

Again, it is not nations. It is companies. As long as companies have a company to sell their offtake to, they will sell it there. Unless we can underwrite that, bring that to the UK, explain why and give UK companies here a reason for building that supply chain, it could go anywhere.

Q22 **Mark Pawsey:** Are there some of these critical minerals where China has a stranglehold or are there always going to be alternative sources of supply?

Jeff Townsend: China has a near monopoly on all of them, and that is because it started this project in 1978.

Q23 **Mark Pawsey:** Paul, what are the dangers of the position that the world has allowed China to get itself into?

Paul Lusty: There are opportunities that we are starting to see between countries like the UK, US, Canada and Australia to develop critical mineral value chains outside China.

Q24 **Mark Pawsey:** Are these countries coming together to provide competition for the material from China, or does China already have it and are the other countries going to have to negotiate with the Chinese?

Paul Lusty: No, they are seeking to co-operate to develop value chains outside China. Coming back to what we were talking about earlier, the challenges are the timescales and the ability of those countries to be competitive with China, looking at energy costs, the technology that resides in China and the very well-established value chains that the Chinese have built up over many decades.

Jeremy Wrathall: There is precedent for the Chinese having already weaponised rare earths by refusing to export what is, essentially, a monopoly. They absolutely did weaponise it. They said, "We are not exporting anymore".

Q25 **Mark Pawsey:** Tell us a bit more about that and the dangers that may exist with some of these other materials.

Jeremy Wrathall: In modern technology such as what we require for electrification of our industry, our economy and our society, these metals are critical. Coal and hydrocarbons drove our economy before. Our future economy is going to be driven by interactions between metals and other materials—exchanging electrons between lithium and nickel, etc. If we do not have access to those metals, we are nowhere. It is as simple as that. If we let other people monopolise it, we are in serious trouble.

Simon Moores: Just to be clear on China's strategy on lithium ion batteries, it does not mine a lot of these critical minerals domestically, but it does refine. It creates cathode and anode, and it creates battery cells. It built massive capacity of the midstream. What happens then? That is where your customers are based. The raw materials flow there, and then it generates trillions of pounds of value downstream in terms of electric vehicles and energy storage. China does not have a lot of these critical minerals domestically, but it does own the midstream, and that is a lesson.

Jeff Townsend: Jeremy said that it has been weaponised in the past. On 16 February, China put Lockheed Martin and part of Raytheon on its unreliable entities list, because they sold arms to Taiwan, so now those companies struggle with rare earths from China. It has been weaponised. In 2010, China did the same when a Chinese trawler went into Japanese waters.

Q26 **Mark Pawsey:** Your concern is that this may happen in the future with these materials. We may have some grand plans for what we want to do in terms of electrification and building batteries, but we may be restricted from doing so because of the stranglehold that the Chinese have on the market.

Jeff Townsend: They can already manipulate prices. They can already raise or drop prices as they deem fit. They have legislation in place to

stop the export. They have control of the midstream. I truly hope that it never happens, but we need to prepare for it and build an alternative. It is not just electric vehicles. It is everything. All five points raised in the integrated review are dependent on critical minerals. The UK's and the West's industrial strategy is based on critical minerals. At the moment, we are entirely dependent on China, and that seems to me like a very silly position to be in.

Q27 **Mark Pawsey:** Moving on to recycling, we may be able to reduce our need for new materials by recycling those that we already have. I recognise that we do not have the volume right now, but to what extent will recycling or repurposing old batteries enable us to have the electrified future that we are all looking for?

Simon Moores: In a best-case scenario, long term, it is 20%. What you are dealing with is massive growth in the market, and you are playing catchup with the recycling. Also, recycling batteries is a nascent industry. It might have been a familiar topic for many decades, but doing that at scale, with the chemistries and the formats of batteries coming into the market, is different. It is highly technical, even more so than people expect.

The key lesson for me is what critical minerals you can easily take out of a battery and use back in a battery. For nickel and cobalt, it is easier. For things like lithium and graphite, it is much harder.

Paul Lusty: The fundamental thing in terms of both processing materials and adding value in the UK, and recycling material within the economy, is that it will become an imperative because of mandated minimum recycled content levels that we will be adopting within batteries. That means that, if we do not have that material in the economy to utilise in battery manufacturing, we are not going to be able to sell into some markets like the European Union.

Q28 **Mark Pawsey:** So there is a legislative imperative to recycling, but is there a security of supply imperative? How far away are we from getting to that?

Jeremy Wrathall: We have been using copper for 4,000 years. The copper market at the moment is about 22 million to 24 million tonnes a year, of which roughly only 30%—maybe a bit more or a bit less—is from recycled material.

Q29 **Mark Pawsey:** Is that because we are not recycling effectively or because the demand is increasing massively?

Jeremy Wrathall: It is the growth in demand, because global population growth is outstripping the ability to supply. It will be an opportunity to have some recycled material, but we are misleading ourselves if we think that we can rely on recycling.

Simon Moores: Recycling is a crucial component in building a sustainable battery supply chain, but it underlines more how important mining is.

Jeff Townsend: We absolutely need to recycle the batteries and the rest of the car, but, once it is recycled, you do not just put it straight back into another. You have to put it through the midstream again. If we do not capture the midstream in the UK, we have to send it abroad to be done. If we do that, and the Government's goal is security of supply, we are already undermining our own ambition. That is why the midstream is such an important part of this.

Q30 **Chair:** Jeff, there are geopolitical and industrial policy questions about the UK not getting this right. You said earlier that we must get it right. Specifically for the automotive industry, my assumption is that, if we do not catch up, as you suggested, Simon, car companies will make decisions over time to relocate new production lines in other countries where these supply chains exist, and we will just see the decline of automotive manufacturing in the UK. Is that a correct assumption?

Simon Moores: Sadly, that is true. That is 800,000 people's jobs on the line, and we just cannot accept that.

Q31 **Chair:** Simon said that we should have British batteries in the same way that there will be American and European batteries. Is the British economy big enough to have British-made batteries alongside American and European ones?

Jeremy Wrathall: The answer is yes, it is, but it also has to be. If we do not, we give away a huge component of value add. The automotive industry is a very large percentage of GDP already, so it is not whether we can. Technologically, we can produce British batteries. There is no question about that, but we also have to, because otherwise we miss out and we export jobs to China or wherever. If we want to do that, that is fine, but it is slow and steady industrial decline.

Simon Moores: The UK car industry, with 4 million cars and engines, for example, is five or six gigafactories' worth just for domestic demand. The same batteries can also be used for energy storage for solar and wind in order to make that industry more effective. There is a lot of room for domestic capacity.

Q32 **Chair:** When you say five to six gigawatts for domestic demand, does that include the cars that we export?

Simon Moores: Yes, everything.

Paul Lusty: Just picking up on this point, because of the UK-EU trade and co-operation agreement, it is going to be vital that we are manufacturing cells and, ideally, cathode active material in the UK in order to demonstrate that we are adding sufficient value in the UK economy to comply with the rules of origin around minimum originating

requirements within the UK economy to be able to continue to export cars to the EU, which is our largest export market, with zero tariffs.

Q33 **Chair:** So, if we do not hit those targets, the export numbers will fall through the floor, because they will not meet the regulatory requirements.

Paul Lusty: Absolutely, we certainly will not be competitive in terms of exporting into the EU market. Our second largest car export market is the US. With the backdrop of the IRA and the subsidies that the US is putting in place, it makes exports to the US look particularly uncompetitive.

Chair: In order to get the subsidy in America, you have to make it in America.

Paul Lusty: Exactly, yes.

Q34 **Chair:** So they will be American-made for domestic consumption in the US, which could reduce the potential for UK exports to the US, because they are making their own, and then we risk not being able to export to the EU if we do not meet the regulatory requirements. Then we are stuffed, really, are we not?

Paul Lusty: Yes. When you put it like that, it is relatively pessimistic.

Chair: We will try to be more positive, but, for now, thank you to all four of you.