HOUSE OF COMMONS

Business, Energy and Industrial Strategy Committee

Oral evidence: Decarbonisation of the power sector, HC 283

Tuesday 21 March 2023

Ordered by the House of Commons to be published on 21 March 2023.

Watch the meeting

Members present: Darren Jones (Chair); Alan Brown; Ian Lavery.

Questions 405 – 431

Witnesses

I: Adam Bell, Head of Policy, Stonehaven; Adam Berman, Deputy Director of Policy, Energy UK; Rachel Fletcher, Director of Regulation and Economics, Octopus Energy; Laura Sandys CBE, Chair, Energy Digitalisation Taskforce.

Examination of witnesses

Witnesses: Adam Bell, Adam Berman, Rachel Fletcher and Laura Sandys.

Q405 **Chair:** Welcome to this morning's session of the Business, Energy and Industrial Strategy Committee for our final hearing on the decarbonisation of the power sector. We have one session today. We did plan to have two, but the Minister had to be in Denmark, so it was a bit tricky to get him here. We will make sure that we ask relevant questions of the Government in our write-up.

We are delighted to have four witnesses this morning. We have Laura Sandys, who is the chair of the Energy Digitalisation Taskforce; Adam Bell, who is the head of policy at Stonehaven; Adam Berman, who is the deputy director for policy at Energy UK; and Rachel Fletcher, who is director of regulation at Octopus Energy. Good morning to all of you.

Today we are going to be talking predominantly about the reform of electricity markets, but I just want to ask you a broader question about the US Inflation Reduction Act, the response that was largely agreed last week by the European Union and our upcoming Green Day in the UK, which might be coming next week. I just want to take your temperature on where you think we are as a country in the middle of all of those big political interventions around energy. Is there anything in particular you would want to see from our Green Day when it comes?

Laura Sandys: Having been in quite a few investors' meetings internationally, I have certainly experienced that the IRA and the EU's package have absolutely been game-changers. In the UK, we have to be very careful not to be complacent about the progress we have made. Both the US and the EU are now looking to leapfrog us and really turbo-charge investment.

These investors are saying to me, "Our investment committees are saying that number one is US investment; number two is EU investment; number three is investment in Asia; and, if you have some extra money, maybe the UK is a useful market".

That is not to say that there is not a lot of excitement around the IRA in particular at this moment, and that might curve down when we start to see more of the details and the actual proposals when they hit the road. One of the smart things about the IRA in particular is that it has been very focused on the manufacturing, not just the outcomes. That whole supply chain thing—capturing the supply chain is going to be a challenge for everyone globally—is going to be significant.

Very quickly on the Green Day, we have to realise this leapfrog has happened. We either have to keep up with that leapfrog or ensure we are designing a system for the future. If you look at the EU and the US, their ambitions are very big, but their plans are quite incremental. We need a

very much bolder plan, in some ways, which is planning from the future, not the incremental pathway to that future.

Adam Bell: The IRA and the EU's response are effectively system-wide. They are looking at everything they can do to capture different components of value across the low-carbon transition. Our challenge is that we will not have the same fiscal firepower at our disposal. Therefore, we need to look at those areas where the UK can specialise and genuinely deliver new value that is world-beating.

There are a number of areas I would be looking for the Government to focus on in Green Day. The £20 billion investment in CCS in the Budget was very welcome, but, at the same time, it did not come with any indication of how it is going to be paid for or where it is going to be spent. The UK does have a significant resource in its undersea carbon stores. Maximising that through the use of carbon capture and storage technology is absolutely key.

At the same time, we also have a significant wind resource. I would be looking to see what the Government can do to lower financing costs for new wind assets at the scale that we are going to need to meet our 2035 targets. We will come onto some of the reasons why those financing costs might be higher later, but it is very important that the Government recognise the challenge they have in getting capital into the sector.

Alongside that, there are a number of new and upcoming areas where the UK has a lot of potential to have technological advantages. We should be looking to maximise our advantage. That includes things like long-duration storage, where some of the most innovative companies in the world are building assets in the UK. It includes things like sustainable aviation fuel. Because of our CCS resources, we have the ability to deliver that fuel with a significantly lower carbon content than most of the rest of the world.

We also have a burgeoning energy services tech industry in this country. As part of the discussion I hope we will get on to, there is significant scope to enable new market structures to give them much more revenue certainty so that people installing heat pumps and EVs can really leverage the best value they can offer to the system.

Adam Berman: I wonder whether it is worth couching this in the broader investment climate. The Inflation Reduction Act is a key factor for developers at the moment.

If you are a low-carbon developer, you face a number of challenges. You face inflation and interest rate increases, which have increased the cost of capital, particularly debt financing. You are seeing a supply chain crunch, where commodity costs have increased faster than inflation. You have seen a lot of regulatory and political uncertainty within the UK, clearly, over the last 12 to 18 months, as well as increased international

competition. That is the context to the Inflation Reduction Act and the Net Zero Industry Act in the EU.

I am not sure whether I quite agree about not being able to go head to head with the US. Clearly, we are not going to be able to go head to head on every single technology, but last week we announced the latest contracts for difference round, allocation round 5, which was two-thirds of the capacity of the previous round and simply does not recognise the higher costs. That is a set of established technologies that the UK has been incredibly successful in. Why are we not building and maximising on that? That is a really open question.

We have also just had the Budget. It was clearly welcome to see some things on CCUS and hydrogen, but there was nothing within the capital allowance regime that went anywhere close to representing a really concerted UK effort on the fiscal side for specific technologies, not all technologies.

It is great that we have this Green Day coming. Certainly, there are major areas of regulatory effort, particularly around grid connection and planning, the old hoary issues for this particular sector, but the thing to stress is that at the moment the Government seem minded to believe that regulatory reform comes with fewer political costs than some of the fiscal items. The reason why planning is complicated and why regulatory reform around grid connection is complicated is because they come with political cost. Whether you are going to do the fiscal stuff or the regulatory stuff, you need to decide that you are going to put the political will behind one wholesale.

Rachel Fletcher: Like other speakers, I would not be downbeat. We have a phenomenal opportunity as a country. We are way ahead of most of the rest of the western world when it comes to decarbonisation. As it turns out, we have the third-biggest tech industry in the world as well. There is a real opportunity to bring these two things together and for Britain to place itself as a global leader in designing and running low-carbon systems using state-of-the-art technology.

Setting out that vision and sense of optimism and then following through with some of the enablers—we will come on to this when we talk about markets—would really help to open up new investment opportunities and create a real sense of confidence in where the British decarbonisation effort is going.

There are some no-brainers from our point of view. A focus on planning and getting the political will behind reforming the planning system would really make a massive difference. That would allow, for example, a burgeoning of investment on onshore wind, which would be very quick to deliver as well as one of the cheapest forms of energy you could want.

It is a great opportunity to stand on our advantages as a country and then set out a plan to show how we are going to capitalise on them.

Q406 **Chair:** We all know what the terms of reference are for the Government's review of electricity market arrangements, but, in the evidence we have been taking, some advocates have said, "We need radical and bold changes in order to hit our targets". Other witnesses have said, "Actually, we are a bit nervous about some of the things we are talking about here. It should be much slower or evolutionary". What is your overall view on that? If you think it is not just an either/or, what are the areas where we need to be particularly radical as opposed to evolutionary?

Laura Sandys: I would perhaps reframe the debate about electricity market reform. It is the wrong place to start. We need to start with retail reform. We need to understand the context of this new system. We are going from a commodity system to a capital asset system. The commodity, which is the wholesale market component, is becoming less and less important. If one goes back to 1990, a terabyte of data was $1 million. Today it is five cents.

Weather does not take price signals, but demand does. We have to understand that demand and supply are becoming equal partners. Again, the recommendations coming forward at the moment are not treating demand and supply equally. We are talking about all these digital and technology assets. We are going from 400 people running the energy sector today, who all know each other's golf handicap, to 100 million actions and assets. In some ways, we need to start by understanding that we are moving from a mainframe system to a PC system. Retail reform is absolute crucial. Demand is equal to supply. That includes things like contracts for difference and the capacity market. All of these things need to be accessible by that demand side.

The second reform I would look at is the whole issue about system reform. Adam rightly talks about long-duration storage. Refrigeration transformed the food sector. Storage is merely the same thing right the way through the energy system. Long-duration storage is particularly important. That system needs to be flex-centric. The number of EVs we will have on the system by 2035 equates to three nuclear power stations. System reform would be my second key area.

The third is the wholesale market. If we are to plan from the future, this commodity is going to become, in some ways, less of an important component. It is going to be whole-system costs, which will be very much more capital-heavy than commodity-valued.

Q407 **Chair:** We have to be evolutionary on REMA because we need to be more radical on other things first.

Laura Sandys: Absolutely, yes. It is about sequencing. We have a sequence problem with our offshore wind because we have not built the transmission. We have a sequencing problem.

From a political point of view, if I may, I would say retail reform is absolutely crucial for politicians to get right before they start changing

the system around it. Consumers can benefit from a decarbonisation dividend or they can veto net zero.

Q408 **Chair:** We should do retail reform first.

Laura Sandys: Yes, absolutely. That should then inform the rest of the system.

Q409 **Chair:** Adam and Rachel, do you agree with that?

Adam Bell: I would endorse that point about sequencing, absolutely. It is very important to look at what we are trying to do with our energy system. Currently, in the case of power, we are trying to deliver decarbonised power by 2035. The big question you need to ask before embarking on a lengthy process of reform is, "Do we need to do that in order to achieve the targets we have set ourselves?"

You can break this target down into the sorts of assets you need to buy. To buy wind, you can use CfDs, as we have done successfully. There are some questions around what you do with all those assets when their CfD runs out, which you can solve, to a degree, by evolving the model. For gigawatt-scale nuclear power, the regulatory asset base is bringing forward Sizewell C and can bring forward other sorts of assets. The CfD regime itself could be repurposed to deliver small modular reactors, as the Government plan to do.

For the mid-merit plant that can respond more effectively to price signals, the Government already have the dispatchable power agreement process in train to bring on power CCUS, as well as the hydrogen production business model to bring on hydrogen production with the potential for power use.

There are some lingering questions around whether you will still need some form of strategic reserve alongside an evolved capacity market and what you would do to bring on long-duration energy storage, but a lot of the components you need to deliver the target are there. That is really important. We have 13 years to double our generation capacity. That is not a lot of time. It is not a lot of time. You might otherwise be subjecting investment to significant political risk.

Some of the investors we speak to are looking at the UK market. They have observed that the Government have just implemented a windfall tax on renewables. They are looking, via the REMA process, at radically reshaping the wholesale market and saying, "This feels a little bit too spicy for us. We are not necessarily sure we want to come to the UK under these conditions." One investor said to me, "This looks a little bit more like a southern European market than the traditional relatively stable and consistent UK market we are used to."

REMA and anything that comes out of that, as well as the windfall tax, will extend for at least five years. That is five years over which we will

find it harder to attract capital into particular sorts of asset, especially wind, and harder to deliver the evolution of generation that we need.

To echo Laura's point, it is very important to get the long-run structure of the market correct. Let us be chaste, but please not yet.

Q410 **Chair:** We have two advocates for evolution, not revolution. Are there any revolutionaries in the room?

Laura Sandys: We definitely believe in revolution.

Adam Bell: Yes, just at lower voltage levels.

Adam Berman: Adam made a really interesting point. There is already reform. It is not that we are looking to the sunny uplands of reform in five to 10 years. There is already reform every day. We have had a major capacity market consultation in the last couple of months.

No one thinks the contracts for difference regime is going to remain the same. It changes every time there is an allocation round. That is because, although we have to align the system with net zero, we know net zero comes in two different ways. One of those is about aligning with the operational requirements of a net zero system, and the other is about the investment requirements of a net zero system.

We are certainly more in the evolutionary camp. Yes, you need change; yes, you need policy structures that evolve over time. In fact, I am nervous that we will spend so long talking about REMA that it is three, four or five years before we actually do the changing. All the meanwhile, we could have been doing incremental evolutionary reform.

Ultimately, you can come up with the most wonderfully efficient hypothetical system, if you want, but, if you do not have the investment to be able to secure it, whether it is in generation or in the networks, it really does not matter how smart that system is. We want a good system, an efficient system and a smart system, but let us do it incrementally over time. Let us make sure it works. Let us make sure it does not scare off the investment we require rather than spending all this time on reforms that may not even see the light of day.

Rachel Fletcher: I would probably put it differently. We have a really big challenge at the moment. We have a wholesale market that works brilliantly to encourage investment in renewable generation. We should be proud of that, and we certainly should not look to rock the boat. I would be cautious about doing anything that upsets investor appetite.

However, we have a glaring hole in our arrangements. We do not have markets and price signals that allow us to optimise the thousands, which will quickly become millions, of assets we have across the system that could be making a massive contribution to balancing supply and demand, avoiding the need for really expensive back-up generation, transmission and storage build.

As a country and as a set of policymakers within Government and industry, we are clever enough to be able to do both: to keep that pipeline of investment flowing and to come up with arrangements that recognise we have a phenomenally valuable asset class. Private consumers are investing in batteries on wheels, otherwise called electric vehicles, and it would be absolutely unforgivable for us to allow that investment to happen and then pay twice because we have not found a way of optimising and using those assets.

I would be radical and say we have to solve this problem. By the way, this is not a 2050 opportunity. It is an opportunity, not a problem. I reckon we already have about 2 gigawatts of controllable demand in EVs right now, today. We know that more and more people are switching out their combustion engine cars for electric vehicles.

We are already selling that asset back into the energy system, but we are responding to a single wholesale price that is not reflecting what the system needs across probably more than half of GB at any one point in time. It feels to me that we need to be laser-like in focusing on where we need change whilst being ingenious in thinking about how we keep investor confidence and investment flowing into generation.

You started by asking whether we needed retail reform. We definitely do need some important surgery on the retail market, but, fundamentally, if retailers are not facing price signals that explain what the system needs when and where, we will not start with a burgeoning set of innovative products that help customers manage their own energy costs and contribute to the decarbonised grid.

Q411 **Alan Brown:** Is there anybody who would want to argue against decoupling the place of electricity from gas? Do you agree that is the right thing to do now?

Adam Berman: I am happy to kick off on this. The price is already being decoupled. That is a process that has already been set in motion. The more low-carbon energy, particularly low-cost renewables, you bring to the market, the lower energy prices will be. Fundamentally, that usually means longer-term fixed-price deals, contracts for difference and power purchase agreements. That is already happening over time.

There is also, in the very short term, a windfall tax that extends over five years, which essentially deals with the gap between the relatively low cost of wind generation and the higher costs of electricity set by gas. That is already in place as of 1 January and is already decoupling those prices. It is happening.

The REMA programme, through the Government, has put forward some proposals for going beyond that, but I would say there is no market anywhere around the world, at least not one I am aware of, that has formally split their wholesale market between the dirtier stuff and the cleaner stuff. There is, unfortunately, no example of best practice we can

really look to on that The best solution we can come up with is to move faster into low-carbon technologies, whether that is big-scale generation or the long and short-duration storage colleagues have talked about today.

Rachel Fletcher: At the heart of this is a desire, which is perfectly understandable, to help energy billpayers benefit from the cheapest form of electricity we have, which is renewable electricity. We would definitely empathise with and support the overall goal, but, very much as Adam said, we are already getting there with CfDs. We have paid back £3 billion to customers already, and we are expecting to pay back £3 billion to customers in the first half of this year alone for the benefit of having renewables on the system. Yes, we need to move faster in decarbonising and make sure that CfDs are continuing to provide that benefit for customers.

Q412 **Alan Brown:** If I could just come back to you, Adam, if there was an energy generator levy imposed, would companies have continued to make massive profits from electricity based on gas prices? They buy, sell and trade at the highest optimal levels. A CfD itself will not be the answer because a company would still make money in the trading system.

Adam Berman: Yes, you strike at the heart of what has been quite a complicated few months. Electricity generators hedge their production a long time into the future. It is very rarely less than a year. It is six months to a year at a minimum, but it is often two years and above. That means that the money generators have been receiving since the start of that crisis have been indicative of previous hedges, but they have hedged at relatively low levels, generally, because no one had an expectation that Russia was going to invade Ukraine and that international wholesale gas prices would shoot up.

In practice, that means the middlemen, who tend to be the traders, have made the lion's share. At the moment, the electricity generator levy is only on low-carbon generators. It does not deal with trading activities at all.

Q413 **Alan Brown:** Should we extend it to traders?

Adam Berman: There is a broader question about how effective the electricity generator levy is and what it will do to investment.

There is a world in which the Government could have come forward with a well-defined and successful windfall tax. Here they have come up with a very poorly designed one, if you are a electricity generator that wants to have any route to market other than a CfD or a PPA. There are not millions of PPAs around the country because there are not a lot of companies you can go to with enough creditworthiness to put in place a 15-year or 20-year PPA. The Government surely want more generation coming forward without subsidies. That has largely been killed off as a

route to market through the electricity generator levy. There is a broader issue around the electricity generator levy.

Around trading more broadly, CfDs do bring down prices. If you look at the most recent price cap, which Rachel alluded to, £54 is being paid back to every household in the UK annually through the CfD programme. That will only expand over time.

Q414 **Alan Brown:** Are you saying the energy generator levy will not bring in the £14 billion or £15 billion predicted by the Government?

Adam Berman: The Treasury has put forward some quite generous estimates of the amount of revenue that may come forward from the levy.

Adam Bell: The important thing here is what the ultimate impact of our system is on consumers. Adam was absolutely right to say that CfDs do ultimately return money to consumers. You can see this through the structure of the price control. For the last five years, there has been a line in there that says, "This is the cost of the CfD". That line is no longer present. It is now a benefit.

CfDs are very helpful in ensuring that consumers maximise the benefit of low-carbon generation. I was very disappointed when, before Christmas, the Government opted to walk away from offering CfDs to existing generators and instead opted for a windfall tax.

Adam is right to say that they will not make as much money as they predict. If all those low-carbon generators had a CfD instead, there would be a much higher return. The majority of that money would come back to consumers in some way, and they would therefore stand to benefit to a much higher degree than they are likely to do.

Adam Berman: That idea is about having voluntary contracts for difference for pre-existing capacity, not just new capacity. Despite having the Energy Prices Act on the books and the power that comes through it, the Government seem not minded to do that.

Under the windfall tax, there is a £75 benchmark and 45% of anything above that will be recovered by the Government. In the latter part of last year, we were talking about contracts for difference that might have had strike prices around, theoretically, £65 or £70, and 100% of anything over that would have been recovered by the Government or consumers. My view is certainly that this would have provided better value to the Government. Unfortunately, they have slightly shot themselves in the foot by not moving forward with a scheme that might have given a net benefit to consumers much faster than the quite flawed windfall tax.

Laura Sandys: I do not have anything to add other than to say that CfDs have quite a cashflow lag. Consumers get the money back after about—I do not know what it is—six months or a year. In some ways, there should be much quicker pass-through. It should also be explicitly

part of our bills; it should be clear we are getting a decarbonisation dividend. In the chaos that has happened over the last two years, consumers have really started to lose trust. Some might say they did not have a huge amount of trust in the sector beforehand, but we really do have to restore trust and make sure the system and the sector are seen as serving customers first.

Q415 **Alan Brown:** When are consumers really going to see the benefits of decarbonisation in terms of their bills? Right now their bills are absolutely following wholesale gas prices. When are consumers going to see the real benefits going forward?

Laura Sandys: They will already be getting money back from the CfDs. It is just that there is a lag to it. It is not "just in time" and it is not explicit enough. We have to look at the whole-system costs. I come back to this point about how the big driver of cost is going to be the system cost, not necessarily the commodity cost. We have to ensure we have a system that is optimising all those resources in the most effective and cost-effective way.

Part of that dividend is about supporting demand-side assets, whether those are PV, heat pumps or any other form of flexibility. Those are as important in terms of value as our offshore wind. That is not necessarily true in terms of scale, but, when we start to look at this system going forward, flexibility is going to be absolutely at the heart of what we need to achieve.

I just wanted to commend Ofgem; that is not always a usual thing. They are out for consultation on a flexibility exchange, which absolutely will unlock quite a lot of these assets and will optimise and reduce whole-system costs for consumers.

Q416 **Alan Brown:** If I can move on, it goes back to REMA slightly. I know the panellists were saying that REMA is not a priority, but I will maybe start with you, Rachel. If we look at a move from flat national pricing to locational marginal pricing, Octopus has spoken in favour of that. Will that reduce electricity bills and make the grid more efficient? How can you guarantee that will be the outcome?

Rachel Fletcher: Lots of modelling has been done to suggest it will help the system be more efficient. Every time modelling is done, it shows an overall benefit to this. Fundamentally, the logic is that in the system right now there is no signal to show new investors where to locate that would be helpful for the grid. That would include, for example, a new big source of electricity demand being located where we have excess wind. We are currently paying nearly £2 billion a year to constrain off that wind.

Equally, at any one time you are getting the same price signal across the whole of Great Britain about whether we should be using more power or looking to conserve it. In practice, across Great Britain, we may very well need consumers in one part of the country to be turning up demand, for

example charging their electric vehicles, at a particular point in time. In another part of the country, at the same point in time, it might be really helpful for consumers to be avoiding electricity use.

Q417 **Alan Brown:** We keep talking about the smart grid. That can be done without having to go to nodal or locational pricing, surely.

Rachel Fletcher: We need a real-time signal that shows what is happening in the local part of the network. You could give that many names, but I am not at all confident that a network charge can give you a dynamic signal that is sufficiently real-time to be driving the flexibility response that Laura has been talking about.

Q418 **Alan Brown:** Take the Highlands and Islands of Scotland, where you have a lot of renewables connecting in a similar location. Investors are arguing that will wipe out the value of their investment, it will be hard to get returns and there will no be an accurate price signal. Are they scaremongering?

Rachel Fletcher: If you took LMP on its own as a standard product and dropped it into the GB market, that is possibly what would happen. We have been talking quite a lot already this morning about contracts for difference. Our renewable generators are not exposed to wholesale prices. Their revenues are determined by the strike price and the contract for difference.

We need to be thinking about how we amend that incredibly successful vehicle for bringing forward renewable investment to make it one that continues to make renewables bankable in a zonal or nodal model. As an industry, we should be getting our heads around the how. How do we keep renewable investors confident while getting price signals that will keep the overall cost of the energy system down?

Lots of studies have been done suggesting that we could be saving £16 billion or £17 billion a year if we were to harness properly the flexibility we will have in our homes, in our vehicles and in small-scale storage, grid-scale storage and interconnectors across the country. Our challenge as an industry is to find ways of putting these assets to use. Yes, we will still need to build new transmission lines, but let us keep those costs to an efficient level, bearing in mind that, as we know, when network companies build networks, as consumers we have no choice but to pay for that for many years to come.

I would also like to pick up on the point Laura raised about customer buy-in and public buy-in to net zero. We are already seeing a real interest in having local wind farms built in areas where we guarantee that local communities will face lower energy prices when those wind farms are producing. We have three such wind farms already. There are hundreds of communities across the country asking us to build wind farms in their areas.

That is a brilliant example of the renewable dividend, as Laura put it, being something that consumers directly feel and see in their pocket. We are offering this to customers right now, but we are effectively having to overwrite the wholesale market arrangements in the energy system and how costs are passed on in order to allow customers to see the value and benefit to them of having local renewables on their local grid.

We need to find a way of running a completely different system. Not only will that save us money; it will also help us get the continued public support we need, if we are really going to hit our net zero targets.

Q419 **Alan Brown:** I realise that time is getting on. Adam Berman, do you have anything to say about locational pricing and the risk to investors versus the savings for consumers?

Adam Berman: Rachel is absolutely right. There is a fundamental question about locational signals in the market, of which we currently have very few, but ultimately the question for us is, "How do you solve that?" Can you solve it through incremental changes to policies we already have in place, such as contracts for difference, the capacity market, the balancing mechanism or the transmission charges, et cetera? Can you solve it through non-market issues, by, at the very least, building out more transmission infrastructure or making sure we have sorted out the planning system?

To be honest, if we were all given a map of the UK, within a few hours we could probably map out most of the generation that is going to exist in 2035 because we are already not that long away from it now. It takes roughly seven or eight years to get your planning; it takes roughly an extra five years to get your grid connection.

In the light of all that, we need to ask ourselves, "What is solvable through mechanisms we already have at our disposal and what is solvable through a more radical LMP-style change?" For us, it is just about the evidence case. If we are going to move forward with LMP, we think it has to have a really high threshold for evidence. It will be a very substantial change, and it will come with some serious political questions for this House and for a lot of the country around how pricing levels are set across the country and how we ensure fairness through that process.

Adam Bell: On LMP in particular, there is a very significant strategic issue that we need to think about. Modelling that has been done to date shows a number of things. It shows that, under an LMP regime, you deliver less wind in Scotland, because wind cannot respond to locational signals because the wind is where the wind is. You certainly cannot respond to locational signals by doing things like building a wind turbine on Wimbledon Common.

What you see instead in the modelling is a significantly higher percentage of assets that can move. These are primarily big gas plants, which start to congregate in the south-east, where there is lots of demand and they

can service that demand more readily. In an LMP world, you increase your exposure to gas prices simply because you are changing the generation mix.

At the same time, within existing markets, there are a number of tools that players can use to utilise their position in the system, including through the balancing mechanism. There are a number of different sorts of investors that are looking at how they can leverage being positioned just behind the grid boundary between Scotland and England to maximise the use of their battery or their liquid air storage, say. Those sorts of mechanisms, with a little bit more transparency and foresight as to what those prices are going to look like, much like Adam said, will help deliver more investment in that sort of capacity and help change the shape of the system.

Rachel, though, is absolutely right when it comes to ensuring that we get the right sorts of signals for local flex assets. That is where, to the Chair's question at the start of this, radicalism is absolutely essential. We need to drive new and novel forms of market structures below the national transmission level into distribution networks.

This means looking again at topics such as whether you need a local balancing market. It means looking at local constraint markets, making them more dynamic and accessible to consumers and making them something that you can invest against if you report failure of assets in people's homes or driveways. Where you have a lot less foresight of their demand patterns, through a clever use of data you can figure out how you can solve problems for a given probability value for the grid. You can trade off the back of that into markets that presently, unfortunately, do not exist.

Laura Sandys: To add to what my other colleagues have been saying, flexibility is absolutely crucial and there need to be price signals there. LMP is an economist's dream. It is absolutely trying to create perfection. The perfection will take a very long time to be implemented. Consider that there will be three years in actually identifying where these nodes are. Then it goes out to consultation for two years. Then there might be one or two judicial reviews. Then it has to go back out to consultation. This is going to be 2031. We need action a lot earlier than that.

Quite a lot of the networks have flexibility exchanges that are starting. The ESO and the networks, and Ofgem and BEIS, or DESNZ, need to focus on this demand side. In many ways, the flexibility is seen as a charming afterthought. Actually, it is fundamental to running a renewables decarbonised system.

It is over-engineered. As a solution, it will take a long time to deliver. Once delivered, you might find that all the nodes have changed because, of course, people, hopefully, will not be sitting on their hands for the next six or seven years. Deliverability is my problem with it.

Q420 **Ian Lavery:** We have discussed contracts for difference a bit this morning. Heading back to that very important issue, there are lots of different views on how successful the contracts for difference and the mechanism is. That is the issue, in terms of how successful it is. There are differing views. According to the Energy Systems Catapult, the current market design is undermined by distorting impacts of the contracts for difference scheme, which, in its view, interestingly, should be phased out. Is contracts for difference the right mechanism for delivering the large amount of investment in renewables needed to deliver the 2035 target? What other options might be available?

Adam Bell: This almost goes back to Laura's point at the start. In order to decide whether you want CfDs or not, you need to decide what your suppliers are going to look like. The Energy Systems Catapult's view of the world is one in which you have very large, well-capitalised suppliers, such as the big six in the 2000s, which are able to act as counterparties for all these generators, so Government do not need to step in and say, "This guarantees your price", in essence.

If you have a different view of how the retail market plays out, if you see there being lots more heterogenous providers that are doing things such as optimising people's cars, heat pumps and so on and so forth, it becomes harder to go into that world. The question, therefore, in terms of the retail market is, "What is your view of the role of Government in this space?" If the role of Government is to provide that sort of price certainty, CfDs are a pretty good bet if you cannot go all the way to something like the more exotic versions of market splitting that we have talked about before.

As a result, in the short run to get to 2035, CfDs look like a reasonable option. There are different sorts of flavours of CfDs. We have talked about evolution already. We currently have one particular version of it, which is mostly designed around buying very big assets out in the North Sea. There are different ways you can configure it to provide different sorts of assurance and different sorts of assets.

We have not talked about small modular reactors yet, for example. They are an asset that is quite different to a windfarm, inasmuch as they will be producing power all the time and, as a result, will want a lower overall strike price. You might want to think about how they bank that price against which market they are facing.

Yes, to your point, there are liquidity challenges arising from CfDs in the forward wholesale market. There are fewer liquidity challenges in the seasonal market where, for example, small modular reactors might want to play. Making sure you have a regime that works for all those assets, which could be an evolved CfD, is absolutely paramount.

Laura Sandys: I am less expert on the CfD than Adam is, but certainly, from an investor's point of view, it exists, it has been seen to work and it has settled the system. We have a lot of things that are a little bit, if not

quite, broken that we need to focus on. I would be worried that we spent time on something that is not broken at this moment when there is so much more on our plate.

Picking up on Adam's point, there is a huge amount of extension to the CfD concept. One thing I am very interested in is energy efficiency. That could also be unlocked through CfDs. I have talked to pension funds around distributed assets. If they got a CfD for putting in, let us say, micro-storage, they would look at that. It is about the evolution of a CfD. I would be concerned, from an investment point of view, that we scare the horses for something where we are not sure what that destination looks like and we will lose time, which is the most crucial thing at the moment in our decarbonisation—

Q421 **Ian Lavery:** That is interesting, Laura. The power station in my constituency, a biomass power station, is making more money with its contract for difference for not producing any electricity whatsoever. That indicates to me that there is something broken in the system. I know you are saying that we do not want to be fixing something that is not broken.

Obviously there is something not right there when you have a biomass power station ticking over, ready to produce, eager to produce, but, if they then switch the switch on to produce, it brings all sorts of different factors into the pricing mechanisms under the contract for difference. That is a huge problem. I have spoken to BEIS and there does not seem to be any flexibility in any of that. It is just crazy to me. That is broken, which would bring us to the next question: what reforms do you think could be brought forward to change the contracts for difference in the short term, and perhaps the long term as well?

Laura Sandys: I do not think we should change the mechanism of contracts for difference. The terms of it I absolutely believe. If, let us say, you look at the amount of curtailed energy and how much that is costing us, it is absolutely huge. If you can have a contract for difference and you could just say, "We are not going to pay curtailment costs", that would drive offshore wind companies to coinvest with storage, which of course makes sense. Currently, they are a little bit like milk farmers. They have to become cheese-makers.

We have to make those contracts drive better outcomes that reflect demand. You can reform the mechanism. I just would not get rid of the mechanism. You can put different contracts against it, but the mechanism is working. Your biomass thing sounds crazy.

Adam Berman: I do not think that anyone is necessarily pretending that the contracts for difference will be the right mechanism in 10 years' time, say, but it probably is the right mechanism for today. As Laura said, there are incremental changes that happen for every new round anyway of the contracts for difference. We have already seen some contractual changes for this new round, allocation round 5, which will be auctioned later this year.

We know from the Government that probably from allocation round 7 there will be some pretty substantial changes. It may well go to your question about curtailment, the broader issue of whether we should move in the direction of, fundamentally, putting more risk on to the balance sheet of the investor in exchange for a smarter system and slightly more flexible services that that generator can actually perform in the system. You might, for example, end up with slightly higher strike prices through the CfD programme, but lower overall system costs.

This reform is the type of thing that is already happening. I would caution the sense that we need to move away from it quickly. If we look at last year's allocation round, none of the major offshore wind developers in that round—I think there were about six or so major offshore wind projects—has received a green light for the final investment yet. They are all delayed in that final investment decision because the Government have not yet recognised, unfortunately, that costs have risen since the time that they put in bids to the CfD programme.

In essence, that shows a little test case of what it would be like for generators, particularly those larger-scale generators of big offshore wind projects, for which there is no other route to market other than a CfD. What would it be like if they were not able to secure that CfD? If they had been able to come forward with those products without a CfD, we would know that by now, because we would have received final investment decision on all of those projects, but we have not.

We are staring the US and the EU in the face when it comes to international competition. You look at the Inflation Reduction Act. It is 10 to 20-year tax credits that are very strong and legally binding. The only equivalent mechanism that we have at the moment is the CfD. We have nothing else that extends that time. We are in energy, notoriously a space that can be a little bit short term.

For example, in the Budget just a few days ago there was nothing, or very little, on energy efficiency. We are all very excited that perhaps from 2025 to 2028 there may be some more funding for energy efficiency. That is great, but, when you are looking at the US, which has a 20-year tax credit, this is not the moment to row back on our commitments to some of those longer-term contracts.

Adam Bell: I completely agree with that. There is something here around the time period over which CfDs extend. A wind farm will last about 25 years. Most CfDs are for 15 years. It was originally a compromise between encouraging market exposure and minimising consumer risk in the event that those wind farms turned out to be incredibly expensive and we walked away from them. That question has now been solved, one way or the other.

A subsequent question is how you hold down costs for wind farms now. Part of that is about giving them forward confidence in prices. If you are a big pension fund and want to buy into a wind farm, you want to know

that you are going to have revenue out the back end of that CfD. The wholesale market by itself is going to be increasingly cannibalised by the volume of wind on the system.

Therefore, there is a big class of assets that, in the mid-2030s, will find themselves going, "We thought we were still going to be making money off this. It turns out that we cannot because prices are pretty much zero every time that we generate". There is something here around a new class of CfDs for repowered or life-extended assets that enable you to go into the initial auction and say, "Actually, I know I know I am going to be able to access price stability post the terms of this CfD. Therefore, I can bid lower and pass those savings on to consumers".

Q422 **Ian Lavery:** What are the current limitations of the capacity market and how should that be reformed?

Adam Bell: It is currently in the process of significant reform. There is one interesting piece, and it goes to the LMP point we have been talking about earlier on. Capacity is not just the capacity across the system. You will benefit from different capacity in different places. There is an interesting debate around the locational component for the capacity market as well as questions around how you best incentivise low-carbon capacity above other forms of capacity.

It is worth DESNZ thinking very carefully around whether you want to have some regional capacity auctions in particular places where you know that you need particular types of capacity with particular types of reliability to satisfy particular sorts of grid complaints. It is an evolutionary step towards the sort of whole-system LMP model that gives you more certainty for a particular asset class in the short run without impacting the investment case for other assets.

Laura Sandys: I would add to this on capacity market reform. It is very technology-based, rather than outcome-based. We need to look at this. I know that I bang on about distributed assets, but, as I said, the number of EVs on the system by 2035 will be the equivalent of three nuclear power stations. These are distributed assets. They are delivering capacity. We have to have a much wider understanding of what capacity means. There is an opportunity to really enhance it.

I also would very much like to see energy efficiency being able to be delivered off the back of the capacity market payment. That is actually delivering capacity. You are actually shaving off the whole-system costs. You have capacity market, in many ways, enhancement, but maybe we need to look at a strategic reserve as we move forward into a very different system that will have a lot of different assets on it. That is something that I know that quite a lot of people have been debating across political parties.

Q423 **Chair:** Laura, forgive me, help me understand what you mean by energy efficiency in the capacity markets. My understanding of the capacity

market is that you get paid to turn something on, to take excess power off the system, or to turn something off. You are arguing about energy efficiency in the capacity market. When you say "energy efficiency", you mean industrial processes.

Laura Sandys: Yes.

Q424 **Chair:** You do not mean domestic.

Laura Sandys: No, but, even so, if we are trying to reduce our energy need, you are creating capacity by being more efficient. You are lowering whole-system costs. What is not ever unlocked by the capacity market is those sorts of, in some ways, positive impacts on the system that are not necessarily about generation assets or storage assets. We need to think about the new system in quite a different way, in terms of what capacity means.

Q425 **Chair:** That would mean, presumably, moving from a system where there is transitory payments at particular times to some form of payment for longer-term incremental change.

Laura Sandys: Yes.

Chair: I think I have understood that. Thank you.

Rachel Fletcher: I would agree with a lot of the reforms that are needed that have been mentioned already. I do not think that we can really justify paying for fossil fuel capacity, given our ambitions to decarbonise. We need better locational signals in there. We are already selling aggregated EV capacity into the capacity market, but that is still, as Laura says, way too difficult. It is seen as an afterthought, rather than something that is going to be a really important plank of our system and something we should be encouraging.

The only thing that has not been mentioned, which I was going to mention, is that the capacity needs of the system are changing as well as we decarbonise. It is not just enough to have capacity on the system, but it has to be able to be delivered when we need it. As we decarbonise, we are running the risk of needing something to deal with multiple days and weeks of low renewable output. That is a gap in the suite of policies that we have on the table at the moment. How do you bring forward the low-carbon hydrogen, hydropower or geothermal resources that will help us when we cannot just rely on flexibility and small-scale storage.

Government recently announced a £7 million fund to look at long-duration storage, but of course that is a very small drop in the ocean. I would suggest that is a challenge for our overall system that needs much more money and attention.

Q426 **Chair:** Rachel, could you help me on batteries? In our previous session when we looked at transmission distribution and system operators, my colleague, Mark Pawsey, was trying to get an answer—I think it was from

the Electricity System Operator—about the role of batteries. He could not quite get a clear answer. I was not quite sure whether there was just a bit of misunderstanding, or whether there was a policy problem around batteries, probably at distribution level and presumably, therefore, including electric vehicle batteries. Is there a nervousness that the distribution network infrastructure cannot cope with it at this stage and they have to spend a lot of money in order to get that the happen, or is there a fundamental policy disagreement within the system about the things that you are arguing for and that Laura has been arguing for, which sound perfectly sensible to me?

Rachel Fletcher: Without having heard that debate, it is a little bit hard to answer this. Distribution network operators recognise that they could be using, say, electric vehicle batteries to help operate their systems. There are some technical challenges in that the network operators do not always know what is happening on their system and therefore where it might be helpful, for example, to have EV users shift when they are charging their electric vehicles. That is a gap that is, I believe, or should be, being solved over the next few years, as they roll out monitoring equipment on their systems. We have a problem of knowing where these assets would really help the system operator where they have network constraints.

There is also a challenge about what the mechanism for tapping into that asset is. We still have a bit of a culture challenge, where network owners are used to having a hands-on approach to how they run their system, but are perhaps less confident that, if they provide some sort of signal that they need a resource, this will turn up. The work that we are doing with our tens of thousands of customers, for example, whose electric vehicle charging is now automated is beginning to break down those barriers and build confidence that this is a controllable asset that you can rely on as much as you can rely on a back-up gas-fired power station or whatever.

We still have quite a long way to go to get the market mechanisms in place to properly use batteries to the best of their ability. To some extent, what we are seeing right now makes us naturally sceptical about approaches that evolve the current system and just create more markets that effectively are dictated and manmade by system operators, as opposed to a cleaner ongoing price signal that reflects what is happening and is not, effectively, a procurement exercise from a central body that may decide that actually what you are offering into that procurement does not really meet what they were expecting in the first place.

Adam Berman: It may be worth going back to the core premise of what the capacity market is. It is the mechanism to provide security of supply. We have to walk a very fine line here. We still have 40% of our overall generation in the UK that is fossil-fuel-based. The vast majority of that is gas, which is the flexible stuff for when the wind is not blowing, the sun is not shining and we do not have quite enough nuclear.

The fine line is that we need, of course, to phase out that unabated gas, but we do not want to reach a point at which we have gone too far in that journey, reached a cliff edge and have not gone far enough in phasing out the low-carbon alternatives. The capacity market has a real role to play, particularly on the short-duration energy storage, to be able to help with that low-carbon flexibility.

When there is a high pressure episode across northern Europe, whether we have electric vehicles sitting on the street is not really going to help for a two-week period where there is no wind. That is when things like hydrogen and pumped hydrogen storage come in. The real incentives there are probably not going to lie within the capacity market.

Laura Sandys: It is a strategic reserve.

Adam Berman: It could be, but also things such as a cap and floor mechanism for pumped hydrogen storage and the CfD for hydrogen you were talking about earlier. It is these sorts of more standalone policy mechanisms. If you look at these technologies, they are where wind was 15 years ago. That is why they need that kind of extra push. I am not sure that the capacity market is the sole place that we should be incentivising them.

Q427 **Alan Brown:** On that long-duration storage, particularly pumped storage hydro, why are the Government not moving forward to deliver a route to market, such as a cap and floor mechanism or whatever?

Adam Berman: That is a good question. I am not sure I have a simple answer to that one.

Adam Bell: I cannot speak for DESNZ, but it is actually quite hard on a couple of grounds. Long-duration energy storage is an incredibly heterogenous category. That includes pumped storage. It includes liquid air storage, compressed air storage and very big batteries that you only invoke occasionally. You need to find a mechanism that properly values all of those sorts of asset classes and gives them the sorts of returns they need to get away, while at the same time ensuring that you protect consumers.

Some of those requirements across those different sorts of assets are different. For pumped hydro, which is a project that takes a long time—you have to drill a hole in a mountain and install very large turbines—it takes quite a while to come to market, during which time you are employing capital and not getting any sort of revenue. They are such big assets that it is difficult to see that you are going to need the same mechanism as you might, say, for a 50 megawatt long-duration energy storage plant, which is just about freezing air and then heating it up again whenever the system needs it. Government are trying to disentangle this but do not necessarily have a clear answer for each of those assets yet.

Q428 **Alan Brown:** Government are entering into numerous one-off agreements for nuclear, but for pumped storage hydro today you have SSE announcing it is doing £100 million in advanced works at Coire Glas. It says it can fund it itself. All it needs is a cap and floor mechanism. Why do the Government not take opportunities to engage, even if it is a one-off while they look at wider market review? If they can do it for some technologies, surely they can do it for others.

Adam Bell: I completely agree. The answer might be that there are just about five people in the long-duration energy storage team and they are all quite busy. I really wish that there was a different answer.

Laura Sandys: Coming back to the whole storage debate, if one looks at the food system, before we had refrigeration we lost 60% of food. What are the storage requirements? They are the same thing—refrigeration of electrons. Frozen food is long-duration storage. It is absolutely crucial to stabilise and bring the system costs down. What their system cost value is is not reflected. We should be looking at this as a key strategic part. It is almost one of the big gaps. It is the big strategic gap that we have in this decarbonisation system.

Q429 **Alan Brown:** If the Government Department is too busy, it needs to get more resource to come in on it.

Laura Sandys: That and transmission are absolutely crucial if we are really going to ensure that we are going to unlock the huge amount of assets that we have. We have a huge amount of wind assets in Scotland. We need those two components to ensure that we have an efficient system. Resource needs to be put into it as soon as possible to get them up and running, so that we are sequencing. Otherwise, we are creating a lot of offshore wind and we have these wind farms but no road that is taking them and then no refrigeration of those electrons at 3 am when we need them during the day. All of this is system design. We have a lot of silos and a lot of policy thinking that comes in technologies, rather than co-ordinated system design and implementation.

Adam Berman: I would completely agree with that. I do not think that the Government would disguise that there are particular technologies that they are minded to incentivise more than others. That is probably not controversial.

Q430 **Alan Brown:** They will be telling us that they do not back technology winners at the same time.

Adam Berman: However, the broader issue is one that Laura is raising. There is a mindset change needed that has not happened yet. We have had a Government, certainly for the past few years, really focused on driving down prices for, particularly, the large-scale renewables. That is great, although at a certain point you are going to reach a price floor under which you cannot keep driving down prices.

Ultimately, it should not be looking at the lowest cost for each project. It should be looking at what the lowest overall system cost is. You might have a pumped hydro facility, for example, that looks a bit more expensive on paper than some other facilities, but that is not to say it is expensive. In fact, it might actually be cheaper overall.

Laura Sandys: Absolutely, yes. This whole-system costing is one of our bugbears.

Rachel Fletcher: Fundamentally, if we could take time away from focusing on these technology-specific solutions, we could put it into creating an enabling environment, so that actually Government do not need to figure out what the lowest whole-system cost is. There are price signals already in place that demonstrate what those low system-cost solutions are.

We are going to get a burgeoning of technological solutions. I am minded that, when CfDs were brought in in the first place, it took quite a long time for Government to agree that they should hold auctions for the CfDs rather than set a strike price themselves for different technologies. What happened through those auctions was a much lower strike price than anybody ever imagined, having done the modelling back at base.

I fear that we are going back into that world where we want to use technocratic solutions to solve our way through to net zero. We need market solutions that help to reveal the most efficient way of doing things. That is what will deliver a low-cost transition for the customers of Great Britain.

Q431 **Ian Lavery:** This is on the role of markets, Government and other bodies. The Department told us that it sees its role as providing a market framework that encourages competition and delivers an "affordable, secure and reliable system, consistent with net zero emissions". First, to date, do you think that the Government have struck the right balance between centralised decision-making and creating a market that can deliver its desired outcomes? Secondly, how far can we rely on the market to deliver the type of system we will need by 2050?

Adam Berman: We have a mix in the UK at the moment. We have a lot of centrally driven procurement, but also incentives for different technologies, as Rachel was alluding to. You had the NAO speaking to you and the NAO report from a few weeks ago is quite sobering, ultimately, about the real need for a coherent plan. That is the need for a centrally driven plan. If we are looking out to 2035 for that decarbonised power sector and 2050 for a net zero economy that is going to be powered predominantly by the electricity sector, what role can the Government play in thinking really closely about how the different technologies play into that, how we balance the system and how the market design is done so that this can be done efficiently?

Ultimately, in some ways this is quite a nice problem to have. If we kept the same energy system that we have today, where about 40% of it is high carbon and about 60% of it is low carbon, we could probably keep on operating it as it is. There would not be any need for a huge re-evaluation. Because we are at the forefront of the transition, it is incumbent on us to decide what that balance looks like between the market and Government.

Where we would land is saying that the market has a really powerful role to play in providing innovation and price discovery, which we have been talking about today, and those benefits to consumers, particularly of the lower prices that can come through that market-driven process. We are mindful that the Government are needed, particularly to de-risk investment and set out that overarching framework for what we need by when to reach our targets.

Adam Bell: Adam is very polite. Government say that they are putting in place market frameworks for the future system, when they are actually going out and buying all the assets they need to meet their 2035 targets, through the RAB, CfDs, dispatchable power agreements and various other routes as well. We have a centrally driven system and we have had that now for the best part of a decade, but we have all pretended really hard that we do not.

Rachel is absolutely right to cite the CfD auctions as an excellent example of markets running in practice. Where Government need to go is, when they are buying all these assets, ensuring that they are injecting a form of competition into that purchase, whether it be through those dedicated price-specific auctions, some sort of tendering process or different sorts of routes. There are really meaningful ways in which the Government can use markets to take some of the decisions off their back.

Where we fall down, though, is that we have to deliver our 2035 target. That is an incredibly challenging target. It requires an enormous number of assets to be built really quickly, not just generation but transmission and a range of other different sorts of asset too. There is no avoiding central direction of that because the Government are very unlikely to increase the carbon price to such a level as to ensure that those assets are delivered by themselves. It comes with lots of deadweight costs and would significantly increase consumer bills.

The trick then becomes how you design almost a central decision-making plan that is as cost-effective as it can be. How do you ensure that you are buying your carbon capture plants, your wind, your nuclear and your storage as cheaply as you possibly can? This is a really important question that has been covered in all those technology silos, albeit a little bit individually. There is something here around how you have a much more coherent view, across those different sorts of assets that you are buying, that is driving competition throughout the piece.

There is also a lot of room for markets to have a far bigger role in those areas where it is always going to be impossible for Government to have a clear plan. That is at lower voltage levels, towards the consumer, where Government will never have a hope of understanding markets and what innovation can deliver. It should be, along with the system operator, identifying new ways of offering value to consumers for the choices that they make.

Laura Sandys: I would like to pick up on the point you asked about what the role for Government is. Others have mentioned it and it has appeared in quite a lot of reports. There is a real issue here about a delivery unit that absolutely pulls these technology silos together. We need a map that tells us about the sequencing. Again, I come back to this transmission not being in place, despite the fact we have generation. We have to have a roadmap that is clear.

There needs to be a conductor of the orchestra. In some ways, that could be the role of the FSO going forward, but we need somebody to co-ordinate roles and responsibilities, sequencing, timetable and policy gateways. If we had that, in my view, investors would be much more confident that they understood where we were heading to.

At the moment, we have a series of consultations that come out, technology-focused rather than whole-system-focused. In my understanding, nobody owns whole-system costs. They own the silo costs, and Ofgem is very good at being very clear about the cost of everything, but, as Adam said, not necessarily the value of everything. What I am really looking for in markets as they evolve is being able to value what the whole system can deliver, rather than markets that are tactical and technology-driven. Maybe I will hope for a long time.

Rachel Fletcher: I agree with a lot of what has been said. We need a much greater role for markets. I am not sure Government are quite living up to their own mantra here. Having said that, where we are going with the future system operator is a good direction of travel.

The only thing I would really like to add to this is, given how much more complicated our system is going to become, which is something to be celebrated, because with diversity of assets comes opportunities to keep our system at low cost, our system operator needs to become digital. It needs to become digitally literate and to be operating the system using modern, state-of-the-art algorithms and machine learning, not through manual command and control and decisions.

We can talk about the role of Government. To some extent, Government are creating an FSO to play an important central co-ordination role, but we must rethink what central co-ordination means in the 21st century. It is not about manmade decisions. It is about using technology to the best of its advantage.

Chair: Thank you very much, all of you, for your contributions. That

brings our session to an end today. There is a lot to do there for the new Department and for the new Select Committee when it comes into life on 1 May. We will get this report written up and out the door before that happens. Thank you once again. I will bring the session to an end.