OFFICIAL REPORT
AITHISG OIFIGEIL

Net Zero, Energy and Transport Committee

Tuesday 19 April 2022

Session 6

The Scottish Parliament
Pàrlamaid na h-Alba

Tuesday 19 April 2022

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NET ZERO, ENERGY AND TRANSPORT COMMITTEE
12th Meeting 2022, Session 6

CONVENER

*Dean Lockhart (Mid Scotland and Fife) (Con)

DEPUTY CONVENER

*Fiona Hyslop (Linlithgow) (SNP)

COMMITTEE MEMBERS

*Natalie Don (Renfrewshire North and West) (SNP)
*Jackie Dunbar (Aberdeen Donside) (SNP)
*Liam Kerr (North East Scotland) (Con)
*Monica Lennon (Central Scotland) (Lab)
*Mark Ruskell (Mid Scotland and Fife) (Green)

*attended

THE FOLLOWING ALSO PARTICIPATED:

Dr Matthew Hannon (University of Strathclyde)
Tim Lord (Phoenix Group and Tony Blair Institute for Global Change)
Dr Richard Lowes (Regulatory Assistance Project)

CLERK TO THE COMMITTEE

Peter McGrath

LOCATION

Committee Room 2

Scottish Parliament

Net Zero, Energy and Transport Committee

Tuesday 19 April 2022

[The Convener opened the meeting at 09:31]

Decision on Taking Business in Private

The Convener (Dean Lockhart): Good morning, everyone, and welcome to the 12th meeting in 2022 of the Net Zero, Energy and Transport Committee, which we are conducting in hybrid format.

Agenda item 1 is a decision on whether to take agenda items 3 and 4 in private. Item 3 is consideration of the evidence that the committee will hear under agenda item 2, and item 4 is consideration of our work programme. Do members agree to take agenda items 3 and 4 in private?

Members *indicated agreement.*

Energy Price Rises

09:31

The Convener: Our next agenda item is the first evidence session in our inquiry into increasing energy prices. The recent significant increases in wholesale and domestic energy prices have quite rightly received a lot of attention in recent weeks, and they are causing real concerns for many people across Scotland. The inquiry will look in more detail at what is causing those price increases, what can be done to alleviate them and how help can best be given to households that are most in need. Our focus in relation to that global issue, which is partly reserved to the United Kingdom Parliament and partly devolved to the Scottish Parliament, will be on the Scottish Government's powers in the area and what steps can be taken.

To discuss some of the issues, I am pleased to welcome our first panel, who are joining us remotely. Dr Matthew Hannon is a reader in sustainable energy policy and business models at the Hunter centre for entrepreneurship, the University of Strathclyde. Tim Lord is the head of climate change at Phoenix Group and an associate senior fellow for net zero at the Tony Blair Institute for Global Change. Dr Richard Lowes is a senior associate at the Regulatory Assistance Project. Good morning, everyone, and thank you very much for joining us. It is a pleasure to have you at the meeting.

We have around 70 to 75 minutes allocated for this panel session, and we will move straight to questions.

As I have said, we have seen significant increases in wholesale energy prices and, as a consequence, in domestic energy prices in recent months. A number of factors have contributed to the upward trend in energy costs. It would be good to get the witnesses' views on the general sense of direction of energy prices in the short term, the medium term and the longer term. What do the witnesses see happening with energy prices over the short term, the medium term and the long term? I appreciate that that is a very difficult question and that no one here has a crystal ball, but I am sure that you are all monitoring developments on the supply and demand sides and keeping close tabs on what is happening in the market. It would be great to get a sense of what we could expect to see with energy prices going forward, to the extent that you can give that.

I ask Dr Hannon to answer that question first, to be followed by Tim Lord and Dr Lowes.

Dr Matthew Hannon (University of Strathclyde): Good morning to the committee.

That is a very good question, to which I have certainly given a lot of consideration. On the analysis of energy prices going forward and how the market will react, it is fair to say that some of the leading commentary has been from Cornwall Insight. That consultancy released an analysis just a few days ago, I think, that suggested that it does not foresee a great deal of change within the next couple of years. Its assumption is that the price cap will rise again in October and we will see a rise in the cost of the average dual fuel electricity and gas bill paid by direct debit from just shy of £2,000 to roughly £2,600. It got the figures pretty spot on last time round, so I would take notice of that forecast.

The headline is that the hope for any significant drop in the price cap in 2023 or 2024 is fading. Cornwall Insight does not expect wholesale energy prices to drop any time soon, and that is the main driver. We can expect to brace ourselves for record energy prices in the next two years.

Two key factors will affect whether we see bills start to drop in the medium to long term. One is how quickly we decouple our energy consumption from the use of gas, both in power generation and in heat. There are difficulties associated with decoupling wholesale electricity prices from the use of gas. Even if we are not consuming much gas, the price of gas will, to a large extent, dictate the price of electricity.

The trend that I see as being most important is the extent to which we can move forward on energy efficiency, particularly through a fabric-first approach. Scotland and the UK are not moving quickly on that. When we look at Government support programmes such as the energy company obligation, we see that we have slowed down significantly compared to 10 years ago. This morning, I looked at some of the data about how much Scotland has achieved on loft insulations. Ten years ago, in 2011-12, we were insulating about a quarter of a million lofts through the energy company obligation, or its predecessor. Between 2018 and 2019, the figure was only 5,000. In the context of an unprecedented energy crisis, we really need to step up our ambition and should exercise whatever devolved powers we can muster, as well as working alongside the UK Government, to ensure that the scale of the ambition for retrofitting is in line with the crisis that we face and meets the scale of the challenge.

The Convener: Thank you for that comprehensive answer, Dr Hannon. You have set the scene well, and I am sure that we will pick up on a number of those points.

I put the same question to Tim Lord.

Tim Lord (Phoenix Group and Tony Blair Institute for Global Change): It is a pleasure to be here today. I agree with a lot of what Dr Hannon said, and I have a couple of points to add.

It is worth repeating what is driving high prices for energy: it is high prices for gas and fossil fuels. There are three main reasons why that is happening. The first is the demand caused by the recovery from Covid. Although the Ukraine crisis has clearly exacerbated the situation in international markets, it is worth remembering that the increase in prices predates the situation in Ukraine. Secondly, there have been various supply shocks, particularly as a result of the Russian invasion of Ukraine. Thirdly, the investment signals in energy production are insufficiently strong, not only in fossil fuels but more broadly, as are the demand signals for energy reduction, as Dr Hannon said.

You asked what will happen to prices in the future. That is very difficult to predict—we learned that this winter. The UK Government's estimates for forward gas prices had a high scenario of around 75p per therm for gas, but we have seen prices well above 200p per therm on average, and they have peaked at 300p to 400p per therm. That is off the chart, and those figures are not outliers.

What we have seen in the markets has far exceeded what anyone predicted, so I would be cautious about making forecasts. Having said that, some of the issues are structural and are likely to persist. Although there is a question about how high prices are going to be, there is also a question about volatility. We are very likely to see far more volatile prices in international fossil commodity markets in the next few years. In some ways, that is as big a problem as higher prices, because it is challenging for investors and it is very challenging for consumers. The energy bill is really the only major bill that consumers have that can change quite dramatically from one period to the next, which is obviously a huge problem for consumers with constrained budgets who are trying to budget.

We will, no doubt, come on to discuss what we can do about that, but there are basically four options. First, we can increase the supply of fossil fuels. In my view, that would not have a huge impact, because of the UK's relatively small role in international markets and because of the timescales associated with that. Secondly, we can reduce demand, as has been mentioned, which can both reduce costs in the long term and help in the relatively short term. That would directly help some of the consumers who most need it. Thirdly, we can move our supply away from fossil fuels in order to reduce the dependence on international markets through investment in renewables and so on. Lastly, we can provide direct financial support.

In the end, any strategy has those four clubs in its bag. The question is in what combination we

use them and how we use them to address the price rises in the short term as well as making ourselves more structurally ready to manage them in the long term.

The Convener: That is great, Tim. Thank you very much for those insights. I think that you have anticipated one of our questions, which is on how to deal with some of the challenges.

Dr Lowes, I put the same question to you.

Dr Richard Lowes (Regulatory Assistance Project): Good morning everyone, and thanks for inviting me to be here. I agree with everything that has been said already.

As Tim Lord pointed out, two things came together to produce a perfect and unpredictable storm: the post-Covid bounce back and the Russian war. A huge amount depends on what happens with both of those things. Does growth keep going? We are seeing fluctuations in prices around the world, but the big impact—locally, at least, because of our links to the European market—will be from the war in Ukraine and the terrible situation there. It is difficult to predict how that will play out.

You should never ask anyone to predict energy prices, and certainly not in the long term. In the short term, the key thing to note is that people have not started feeling the pinch yet. Although there have been short-term fluctuations in the gas price, which went up to huge numbers in October and more recently, people have not really felt the full impacts yet. So, although we know roughly what the full impacts will be, people's direct debits might only just have gone up, prepayment meter prices have only just gone up and it has been a mild winter. For the short term, we know what the prices are: they are high—possibly double what they were last year. Therefore, the key short-term issue is whether people pay their bills.

In the medium term, the gas futures market still looks very high and I do not think that we are likely to see any let-up before the end of 2023, based on most of the predictions and forecasts that I have seen. That is at least a year and a half of struggle and high costs. Beyond then, I am afraid it is a question of "Who knows?"

We know what is cheap, though, so we know the things that are cost effective already. We know, for example, that insulation is cost effective and that renewables are very cost effective. The biggest impact on prices over the long term is the fact that all the things that were already cost effective for achieving net zero—onshore wind, solar, efficiency, heat pumps and electric vehicles—are now relatively cheaper. There is a financial question there about how you allow people to reap those relative benefits.

Basically, the market is high in the short and medium terms. We do not know about the long term, but a sensible strategy would be to eliminate our exposure to fossil fuels—or certainly to reduce it as much as we can. That goes for both gas and oil, because the prices of both have gone up significantly.

The Convener: Thank you. The panel has set out a great number of issues that committee members will want to explore.

My follow-up question is about the best policy response. What policy response would you like to see from the Scottish Government and the UK Government to deal with the short-term and medium-term challenges, as well as the longer-term structural issues that the sector faces? Bear in mind, obviously, the overriding priority of reducing climate emissions. I think that all the witnesses mentioned managing demand and the ability, in the short term, to address the demand side of the equation. I would appreciate your thoughts on that.

Perhaps Dr Hannon could begin, followed by Tim Lord and Dr Lowes.

09:45

Dr Hannon: That is another excellent question. There is no point in setting policy without having a clear objective in mind, and the objective—apart from reducing carbon emissions—should be twofold in terms of cost alone. One objective should be about reducing overall costs for the system—by that I mean the cost that the average consumer faces for satisfying their energy needs. For a domestic customer, that is about comfort and standard of living; for a commercial customer, that is about what it costs to operate cost effectively. The other objective should be a just transition—asking how much the different segments of the economy and society should pay.

In relation to the first objective, we have spoken about demand reduction to reduce the overall cost, but it is also, as Dr Lowes quite rightly pointed out, about bringing on line the cheapest forms of power. We need to do all that we can to bring onshore, solar and, increasingly, offshore energy on line. That is not just about subsidy and a planning and consenting regime that encourages that; it is also about having the networks in place to transport the power reliably and cost effectively—cheaply—from areas of high supply to areas of high demand.

The point about who pays is really important, particularly in relation to how we raise money to cover the policy costs. Colleagues at the University of Leeds—Anne Owen and John Barrett—have done a fantastic piece of research on how we raise money to cover the subsidies.

Typically, for energy and climate change policies, we do that through our energy bills, as a levy. Many members will be aware of that. The research looks at different ways in which we can raise funds, and one option that is explored is doing that through general taxation, which is a more progressive approach, because the highest earners pay proportionally more towards covering those costs.

There is also a question about how we balance those costs between gas and electricity bills. I know that the UK Government is actively exploring shifting those costs—which are typically higher on electricity bills as green levies—on to gas bills. That might help to tick the carbon emissions box. I know that Dr Lowes has explored such issues in the past. However, that might also start to increase the costs for those using gas, and many of those households might be fuel poor.

I present to the committee those two objectives: reducing overall costs and, by asking who pays, finding ways to pay for that in the most progressive and fair manner.

The Convener: Thank you for that, Dr Hannon. I know that some of my colleagues want to address those issues after me. I put the same question to Tim Lord.

Tim Lord: I will build on the point about objectives. What are our objectives in the short term? We need to get prices down in a fair way, as Dr Hannon says. Secondly, we need to reduce our dependence on commodity markets. In the context of net zero, it is worth pausing to think about what we would do differently as a result of doing that. If there is only one, thin, silver lining, it is that the things that we need to do to achieve net zero—obviously, Scotland has more ambitious net zero objectives than the rest of the UK—are exactly the same things we would want to do to achieve our objectives in the context of the energy crisis.

The second point that I would make, as a preface, is about investment. We have a huge investment requirement across energy supply and demand, which the Association of British Insurers has estimated as being £2.7 trillion to 2035 UK wide. That probably equates to something like £200 billion to £300 billion in Scotland on a population basis—perhaps a little bit more, given Scotland's capability around renewables. The crucial point is what we are doing to enable that investment to flow. That includes everything from the very largest offshore renewables projects to people installing insulation in their homes.

To address your question directly, it is worth breaking things down into the short, medium and long term. In the short term, what can we do for the coming winter, in particular? As Dr Lowes said, we have not yet seen anything in terms of the impact of energy costs—painful as it has been already. The first step is about reducing demand. We should not treat energy efficiency as a silver bullet, and we cannot insulate every home in the country by the winter. However, with the funding and support in place to enable people to do that, we can start biting chunks out of it relatively quickly.

Secondly, I would like Governments to do much more to talk to people about the behavioural things that they can do, such as turning down their thermostat by 1°C, which can cut heat consumption by 10 per cent. Similarly, changing boiler flow temperatures—which sounds technical but is not hard to do—can save somewhere between 5 per cent and 10 per cent on their bills. People can do things directly that support the aims that we are trying to achieve.

With regard to the medium term, I will not say anything terribly surprising. We need investment in renewables, but it is not just about the money and the investment frameworks; it is also about, for example, removing the planning constraints that mean that offshore and onshore wind projects take a lot longer to get from project conception to delivery than they need to. That said, Scotland is in a better position with regard to onshore wind than other parts of the UK are.

With regard to the long term, considering things such as potential investment in nuclear power is a sensible thing to do when we think about what a net zero power system will look like in the 2030s and how we can continue to service demand in a renewables-heavy system.

However, the strategy needs to consider all three of those timeframes. The UK Government's energy security strategy looks much more at the long term, which is a risk.

The Convener: I put the same question to Dr Lowes.

Dr Lowes: I totally agree with Tim Lord about the long-term nature of the energy security strategy that the UK Government announced a couple of weeks ago. It seems to be looking at the long term rather than the short term.

When you think about what a policy response should be, you need to think about what problems you are trying to solve. Obviously, the climate change issue needs to be resolved, but energy security has come to the fore in a way that I do not think anyone expected. There had always been a relaxed assumption that we could rely on fossil gas imports as we gently weaned ourselves off carbon fuel on the way to net zero. We need to tackle both of those issues.

I will sort of repeat what I said before. The first point is that these price rises have not hit people

yet. The most important thing is that people have enough money to be able to eat and keep their houses warm. If anyone is struggling, they need to be offered benefit support or some other support from the system. At the forefront of everyone's mind should be the fact that next winter will undoubtedly be extremely tough, particularly if it is a cold one, because that is going to have direct health, social and welfare impacts.

On longer-term energy strategies, there are some interesting parallels to be drawn with what happened in the 1960s and 1970s. Similar spikes in the price of oil led to the Nordic countries totally weaning themselves off using oil for heating. Those countries led significant multi-decadal energy efficiency and electrification policies, which mean that Sweden now has the world's largest heat pump market, followed by Norway. In Denmark, there are huge heat networks—it has one of the world's largest heat network markets. Those were rational responses to an oil price issue, and the price impacts that we have seen over the past few months are certainly as big as those oil crises in the 1960s and 1970s.

The other parallel is with the expansion of the UK's gas grid in the 1960s and 1970s. That happened for reasons that were different from the reasons for what was happening in Scandinavia. It followed the discovery of North Sea oil and gas, which meant that there was suddenly a huge amount of gas that was ready to be tapped into and that we knew could heat homes and fuel power stations eventually. The response to that was to convert the UK's gas grid to run on natural gas rather than town gas, and to expand the gas grid. I guess that the parallel is that we are rapidly running out of gas from the North Sea—we know that it will basically all be gone by 2035 or 2040—and that the cost of renewables has plummeted. That means that a strategic response would involve a national strategy based on energy efficiency and electrification, because they are the resources that are available now and they are increasingly cost effective.

The other important thing to say is that, although, in the short term, we cannot deliver lots of energy efficiency, steps can be taken to bolster that. Tim Lord has mentioned many of them, but I would be a bit bolder on delivery and deployment. For example, we can insulate a lot more lofts if we really go for it over the summer period. There should be a short-term impetus on energy efficiency, as long as that is part of a longer-term pathway.

The Convener: The opening remarks have covered a huge number of interesting issues. I will now bring in other committee members.

Fiona Hyslop (Linlithgow) (SNP): Good morning, panel, and thank you for joining us. Please feel free to expand on your previous remarks. I am interested in the historical context that we have just heard about from Dr Lowes and that rapid acceleration of electrification, particularly in Scandinavia, in the 1960s and 1970s. Some of us are old enough to remember the 1973 oil crisis, and the very practical implications that it had.

My question is first to Dr Lowes. What can we learn from the speed of the response in the 1960s and 1970s? Indeed, are there any lessons that we should learn from that? What should we expect now?

Dr Lowes: That is a great question. I am afraid that there is no simple answer, because the response was a very strategic one that took many decades. With energy efficiency and heating, it is fair to say that Sweden, for example, went on energy efficiency first and then went more on electrification. Heat pump deployment, which really started to kick off only in the late 1980s and 1990s, relied on continuous support. Sweden had a target, and measures were introduced, including carbon taxes, grant support and skill support. All those things happened together and were maintained over the long term. That built up the base from nothing, and Sweden has ended up in a situation in which it is second nature for people to get a heat pump when they get their heating system replaced. The same applies in Norway.

I am afraid that, in the short term, not much can be done to drive these things, apart from setting up the framework to eventually deliver them. I know that that does not sound particularly helpful, but that is how you do it. It cannot all be done in a year—it will take decades. However, the earlier you start, the easier it is.

Fiona Hyslop: I will bring in Dr Hannon, who might want to reflect on any other international comparators, either historical or contemporary.

Dr Hannon: It is an important question, and history has some lessons. Your question brings to mind what Japan did post Fukushima to try to reduce its energy demand, as it lost many of its nuclear reactors, some of which are still mothballed today. The programme there, which was known as setsuden—excuse the lack of native tongue—quite quickly achieved roughly a 20 per cent reduction in peak power. Basically, the aim was to cut the fat, for want of a better word, in what was running and to consider what was not essential but perhaps desirable.

I do not think that the UK or Scotland has positioned itself on a war footing in tackling the crisis. As Dr Lowes rightly said, we are aware of the scale of the pain that is coming but, until we feel it, crisis management will not kick in. I am concerned about that. That crisis management comes not only from Government but from people

around the kitchen table at home, actually feeling the pain and then positioning themselves. They need to be helped to do that, and one of the greatest tools that we have in that regard is energy advocacy.

We have many useful centres of information, some of which are on our high streets—I am chair and trustee of an organisation called South Seeds, which is a community environmental charity based in the south side of Glasgow. We literally have a shop front and bring in people who are struggling to pay their energy bills in order to speak to them and help them to identify not only the scale of the problem that they face but the causes of that at home. To go back to the Fukushima example, some of it will be about energy efficiency—it will be about things that people are running that they can do without. However, more often than not, people have already cut right to the bone.

Energy advocacy services are stretched to breaking point, and that was the case even before the price cap rise on 1 April. At South Seeds, we would typically expect to offer people a consultation in a few days or a week but, even before the price cap rise, it was up to three weeks. We have fantastic people in those organisations offering support, providing step-by-step guides and actively helping people to reduce demand. They also provide emergency support through things such as the energy redress scheme. However, if people cannot get an appointment with such organisations, they cannot receive help. People are literally waiting for appointments to get help with their energy bills.

To summarise, we need to treat this like a crisis. We are calling it a crisis, but we are not quite treating it like a crisis yet. Part of doing so involves providing face-to-face support to advocate solutions and to help to unpick the very complex issues that people are dealing with. It is not only energy prices that are feeding into the cost of living crisis; there are myriad interconnected pressures. Households need somebody to put an arm around them and help them.

10:00

Fiona Hyslop: Thank you. Does Tim Lord have any reflections on international and historical lessons that we might learn?

As well as this crisis, we are facing the climate crisis. Reference has been made to the trillions of pounds in funds that need to be invested. We have heard from Dr Hannon that a fabric first approach will be essential to help in the immediate term. Is there no way that we could ask the private sector to mobilise in order to help with that investment in the short term? Such investment might not be as attractive as offshore wind investment, for example, but it would make a real difference to people's lives this winter if such mobilisation could take place.

That question provides quite a large canvas, but any reflections would be helpful.

Tim Lord: I will draw out five key things in relation to international comparisons and historical comparisons in the UK. Those include, more recently, comparisons with energy efficiency programmes such as the green deal that were not as effective as we hoped they would be.

It is really important to look at the issue from the consumer perspective. My first point is about information. Something like half of people do not realise that their gas boilers create greenhouse gas emissions, so they do not necessarily appreciate that context. That is not their fault; it is because that has not been explained to them very well. When people try to get information about the energy performance of their home, energy performance certificates and so on do not necessarily provide high-quality information. That is the first thing that we can collectively address. The Government can play a big role by helping people to understand the context of their energy use, particularly in their own homes.

The second challenge relates to the fact that capital costs are high. At the moment, in general, they are higher for low-carbon heating solutions than they are for high-carbon heating solutions, but that does not have to be the case. Other countries have tackled that.

To directly address your point, I think that the private sector could and should be investing more. We are obviously a very large investor across the economy through our pensions business in particular. We do not need Government to pay for all this stuff; we need better investment frameworks, seed funding, interest-free loans, which have huge potential, and grants, particularly for those on lower incomes. That would, I hope, enable us to package things up into larger potential investment opportunities, which the private sector absolutely should be getting behind, and it is ready to be quicker in doing so.

The third issue relates to running costs. Until a few months ago, the running costs for a heat pump were higher than the costs for a gas boiler. Interestingly, that is not necessarily the case now. In most contexts, heat pumps are now potentially cheaper to run than gas boilers because of the rise in the gas price. However, at the moment, we load a lot of policy costs on to older renewables projects, including those in Scotland, given how renewables have grown, particularly in Scotland. We need to look at how those costs are balanced across bills and general taxation, because that issue is providing a direct disincentive for people

to move away from fossil gas and on to lower carbon forms of heating, with potentially lower costs.

The fourth point relates to clarity of policy direction. Most boiler purchases are distress purchases when someone's boiler breaks and they need a new one. Recently, I looked into getting a heat pump, but I was told that the soonest that I could get one was probably 2024. That was not hugely helpful. We need a clearer policy direction to enable people to make such decisions for their own homes.

That takes me to the fifth and, in some ways, most important point, which underpins everything that I have said. We need a supply chain that enables people to decarbonise the heating in their homes. At the moment, that supply chain is simply at far too small a scale. However, if we do all the other things that I have talked about, it can be scaled up quite rapidly over the next few years so that we can start to deliver, across the UK, 1 million or 1.5 million homes a year with low-carbon heating installations by 2030.

Fiona Hyslop: Thank you. The other area that I want to cover is energy market reform. I come to Dr Hannon first on that. You talked about decoupling gas, for example, when it comes to price setting. I am interested in your views on energy market reform—what is needed and when—and whether we should be shifting to make sure that the energy market is designed to ensure secure, affordable and sustainable energy. If you could unpack the separation of gas from that price setting, that would be helpful as well.

Dr Hannon: That is a very live topic, and one on which I do not profess to have the immediate answer. I believe that the Government is looking to consult on how to do that.

The principles are simple. Given a global commodity, how do we start to insulate the effects of gas prices on electricity? One option, which is part of what will likely be a raft of much wider policy and regulatory change, is to consume locally generated electricity. There is legislation—the Local Electricity Bill is, I think, at first or second reading in the House of Commons. That is about laying some of the groundwork to enable small electricity suppliers—which normally are unable to enter that marketplace because it is so costly, time consuming and administratively burdensome to meet the licensing arrangements—to be able to produce electricity and sell that directly and locally and, in doing so, to start to arrange means of insulating themselves from the wider market, as it were.

However, I do not profess to have the direct answer on that, and it is a very live topic, so I defer to my fellow panel members.

Fiona Hyslop: I was going to suggest to the convener that we might move on, so that other members could come in. However, if other panel members have anything to say on energy market reform, I ask them please to indicate through the chat function or to bring it in when somebody else asks a question.

I think that Tim Lord might want to say something. I will pass back after him.

Tim Lord: I am very happy to come in later but will make a very brief comment now. The market that we have is designed around gas: that is, low capital costs, high running costs and flexible supply. The market that we need is almost the opposite of that: high capital costs, low running costs and flexible demand.

In some ways, one of the most significant announcements that the Government made last week was about the institution of a programme of market reform. It is absolutely essential that it reforms the market. Within that, the key is fairness for consumers. When we think about the zero-carbon houses of the future, we often think of four-bedroom detached houses with solar panels on the roof and electric vehicles in the driveway, and we need to make sure that whatever reforms we take forward deliver an outcome that is efficient for the market but also works for consumers of all types.

Fiona Hyslop: Okay. Dr Lowes, did you indicate that you want to come in?

Dr Lowes: Yes. There are two key elements. One concerns the fact that there is still no environmental price reflected in gas. That is basically what Tim Lord just said. There are issues with changing that—if the gas price is pushed up even further, that will cause issues for people. If any reform is done there, it needs to be in the context of wider changes.

The biggest issue in relation to gas is that the power price is, in effect, set by the gas price for much of the time, so that, even though lots of renewable electricity is coming online, we are not feeling all the financial benefits of that. There is, therefore, discussion of a potential move towards separate markets. One would be for renewables that can run all the time—those involve low operational costs but high investment costs. That would be separated out so that there is a bifurcated market—in effect, two markets alongside each other.

A lot hinges on what will develop with the retail market review. The UK Government has yet to respond to that consultation, but we will see that, I hope, in a few months.

Fiona Hyslop: Thank you. Clearly, a lot of this is reserved to the UK Government, but it is very

helpful to have a rounded analysis. I will hand back to the convener.

The Convener: Thanks very much. I now bring in Mark Ruskell.

Mark Ruskell (Mid Scotland and Fife) (Green): Planning has been mentioned, particularly planning for onshore wind and solar. Obviously, planning is devolved. I think that there was some reference to planning in the UK energy strategy, in relation to the English planning system, but what more could the Scottish Government do to develop onshore wind and solar not just with planning but with other areas of devolved responsibility?

Dr Hannon: We can compare what Scotland has achieved with onshore wind with what England has achieved since the moratorium on onshore wind was effectively put in place during the Cameron Government in 2015. We can see that very little onshore wind has come online in England, whereas Scotland has rolled out a significant amount. Whitelee wind farm just south of Glasgow is testament to that, as it is one of the largest onshore wind farms in Europe.

The devolved powers around planning, alongside some of the subsidies that were in place during the mid-2010s, enabled onshore to come online. The onshore renewables roll-out in Scotland might have suffered somewhat at the hands of how contracts for difference were structured in recent years but, slowly but surely, we have seen onshore wind start to inch back in, with things such as remote island wind. It is now explicitly noted that provision is made for onshore wind, albeit that the forthcoming CFD round will see a relatively small budget for that and a UK-wide cap of about 3.5 gigawatts.

What more can we do? The crucial point that I want to get across is the need to couple onshore wind with communities, although we can also extend that to offshore wind. If communities can see an onshore wind site, and they understand that a portion of that site is owned by the community and a portion of the revenue surplus that it generates will be controlled and spent by the community for the community, we will see not just less opposition to onshore wind, but a greater appetite for communities to partner with other local stakeholders in new onshore wind initiatives. I include solar and hydro in that. Onshore renewables should be framed as being for the community and owned and managed by the community, if not wholly then certainly in part.

Scotland has done fantastic things on that front, but many of the low-income communities that I have faced—we have done a lot of work on finance in the past—do not have the local citizen finance to crowdsource in. That means that the community itself does not necessarily have the money to kick-start initiatives. In the absence of many of the revenue payments that we have seen, such as feed-in tariffs and renewable heat incentives, which have all recently gone offline, finance has become harder to secure because those communities cannot offer investors the same return on investment and have to rely much more on their own pockets, which is difficult for low-income communities. If we want to go big on onshore wind, and if we are serious about that and other onshore renewables, we need to support those lower-income and high fuel poverty communities to initiate their own projects.

Mark Ruskell: Should community benefits be a material consideration in the planning system? At the moment, they are not. Projects must be considered on merits such as what they look like and where they are sited, but wider community benefits are not part of how a project is determined, and it is the planning system that holds everything up.

Dr Hannon: Aquatera released an interesting piece of work a few months ago that compared a number of projects that were privately owned and had community benefit funds with those that were community owned and had community owned and managed benefit funds. It was identified that, across the two groups of projects, 34 times more community benefit in terms of value was drawn down by projects that were community owned. If a local authority is looking to support various climate and social welfare objectives, that seems an important finding.

I encourage the Government to support local authorities to prioritise planning where projects can generate significant surpluses through low-carbon activities, to ensure that those surpluses are managed by communities for other initiatives, and maybe to deliver on that triple bottom-line value. The planning regime should support economic value, environmental value and social value.

Mark Ruskell: Thank you. Tim Lord, what are your reflections on the question of onshore wind and solar?

10:15

Tim Lord: On the wider context of your question, I do not claim to be an expert on every detail of the Scottish planning system. In Scotland, you have got a lot right in renewables deployment over the past decade, and we should build on that success.

First, pace is a key point. It was said earlier that we are not yet treating this crisis like a crisis—it is a climate crisis and an energy supply crisis.

We are looking throughout the chain. It is not about running roughshod over what local communities want. We know that, for example, about 80 per cent of people support onshore wind and about 4 per cent oppose it. As politicians, you know better than me that it is quite hard to get 80 per cent of people to agree about anything. We have a bedrock of public support, so there is a case for looking closely at how to take fat out of the system to ensure that projects that might take only a couple of months to build do not take 10 years to start to be built.

Secondly, I agree with the points that Dr Hannon made about the local benefit to communities, which has been effective in other countries. We have made some progress in that area, but we can do more.

My third point is about investment in networks, where there is a challenge that we underestimate at the moment. There was some reference in the UK energy security strategy to investment in advance of need. However, when we look at the scale of the renewables potential in Scotland that is still unexploited, even with the progress that we have made so far, we see that there is a huge challenge in getting that energy to where it is needed, getting it to work productively and avoiding huge amounts of it being constrained a lot of the time, which is deeply inefficient and, quite rightly, unpopular and politically challenging. Thinking strategically about how we deliver network investment, not just for the onshore network but for the North Sea as a strategic electricity generation asset, is really important. That is partly a reserved matter, obviously, and elements have been devolved. That is a complex challenge for the Westminster and Scottish Governments to address together.

My final point is that we must think about the issue as a systemic challenge. We have made huge progress in decarbonising electricity, but we have done it in swim lanes: we think about electricity, homes, transport and hydrogen separately, yet the nature of the transition that we will make over the coming decades will involve all those things merging together and interacting with one another. We must think about the investment and planning challenge in a more systemic way—for example, how we can use excess renewable power to generate green hydrogen—because it will be really important to achieve the transition in an efficient way and in a way that will drive economic benefit beyond low energy prices and into things such as the creation of new industrial sectors in Scotland and elsewhere in the UK.

Mark Ruskell: Thank you. Do you have anything to add, Dr Lowes?

Dr Lowes: Tim Lord has talked about networks and Matthew Hannon has talked about wind, which are two huge infrastructure planning challenges. The other is buildings. There are huge amounts of planning regulations at building level that need to be, in effect, ripped up if we are to reach what the targets say that we need to reach and what most people want us to reach.

The Scottish Government has made good headway in its work on local heat and energy efficiency strategies, which is about local homes and energy efficiency planning. That is good and should be continued, because it is needed. It is local area-based planning that looks at energy efficiency and heat networks potential.

However, when it comes to planning permission, there is a huge amount of regulation that holds back the deployment of renewables and energy efficiency at buildings level. The issue that really gets me going is windows and the fact that, in some cases, people have to apply to get secondary or double glazing. That is of course linked to heritage and conservation areas, but, at some point, a judgment has to be made about what is more important. Do we manage our heritage or do we meet our net zero targets?

The example that I will give is of a bed and breakfast that I have stayed in a couple of times in Hillside Crescent, which is not at all far from the Parliament building and is in a conservation area. It has 3m-high windows—all single glazed—and solid stone walls. Such buildings need to be decarbonised, but there is nothing that the owner of that hotel can do. A decision has to be made so that people are allowed to put double glazing in those buildings and to insulate them. If they cannot insulate them at all, we will really struggle not just to meet our net zero targets but to ever make such buildings affordable to heat. You need to remember that in the context of the fact that their energy costs will have tripled by next year. Building-level planning not only for glazing but for energy efficiency needs to be ripped up and started again.

Mark Ruskell: I will move on to questions about blue hydrogen. The UK Government and Scottish Government have been bigging up its potential role. That was before the gas price started to peak and before the volatility that we have seen. Where does blue hydrogen sit now? Are the economics of it still sound, given the gas price? Many of the carbon capture and storage projects that are proposed around the UK have blue hydrogen as part of their business case. Does it have a role in heating? Where should we use it or should we use green hydrogen?

Tim Lord: Blue hydrogen potentially has a role in the relatively short term. Green hydrogen is currently more expensive and some industrial assets might be well suited to producing blue hydrogen.

We need to think carefully and cautiously about blue hydrogen for a couple of reasons. One is that, as I said, one of the big challenges in relation to international commodity markets, particularly gas, is not only the level of pricing—that is, whether the price is high—but the volatility of price as we move through a fairly sustained energy crisis and a net zero transition to which significant volatility will be attached. If we put too many eggs into the basket of blue hydrogen, we build that volatility into an important market. Although there are projects that could be useful, could be economically viable and which investors will want to get behind, we need to think carefully about what we need to believe for blue hydrogen to be economically viable in the medium to long term and what pricing situations could undermine that.

The second reason that we need to think carefully about in relation to blue hydrogen is emissions. It still produces emissions and, ultimately, if we are going to get to net zero, those will have to be offset or captured somewhere else, which impacts on the economics. Therefore, when we think long term, we need to think about the whole-system costs of blue hydrogen as opposed to alternatives.

On the use case for blue hydrogen, I fear that you will get broad agreement from the panel that hydrogen has a hugely important role to play. The Climate Change Committee scenarios had something like 300 terawatt hours of hydrogen in 2050. That is about as much as the amount of electricity that we use today, so it is a huge new sector to go from a standing start in the 27-and-a-half years to 2050. However, that is principally about heavy industry and, to some degree, heavy transport, not really about home heating. I cannot remember who it is that describes hydrogen as the Heineken fuel in that it should reach the parts of the economy that electrification cannot. You would struggle to find independent analysts who argue that hydrogen will ultimately be a lower-cost solution to heating than alternatives such as electrification and heat networks.

Blue hydrogen is potentially useful, but its role needs to be very carefully considered and we need to ensure that it gets to the parts of the economy where it can be most effective in comparison with the alternatives. In most cases, that is probably not home heating.

Mark Ruskell: Dr Hannon, do you have anything to add to that?

Dr Hannon: I do not have a tremendous amount. Everything that Tim Lord said is spot on, but there are a couple of points to raise.

Market formation and signalling where we will take the hydrogen market are important. The first and foremost question is, as Tim Lord rightly points out, what we need hydrogen for and where it will be required. That debate is starting to settle in. I am sure that Rich Lowes will comment in a moment on its role with regard to heat. However, it is important to signal where it will be required.

The secondary question to that is whether it should be green or blue hydrogen. The more that you push on blue, the less you will be able to signal that there will be a future in green, so you will not necessarily sink the same investment and effort into growing that supply chain. Therefore, a careful balance needs to be struck. There are many vested interests in the blue hydrogen camp of which we need to be wary.

The more green hydrogen that you bring in, the more you will have to invest in a timely fashion in renewables capacity. The shift to electrification, whether for heat or transportation, means that we are already going to have to increase our capacity significantly, and that will be extremely challenging, even with some of the support that we saw in the energy security strategy just before Easter with regard to the ambition to deliver 50GW of offshore wind. The stronger our moves towards green hydrogen, the more that we will need to consider other system implications with regard to renewables generation capacity being brought in at a timely moment and networks being reinforced to ensure that that power is brought to where it is needed.

Mark Ruskell: Thank you for that. Did you want to respond, Dr Lowes?

Dr Lowes: We have spent a lot of time talking about blue hydrogen, and I spend a lot of time thinking about it, even though there is only one plant—in Canada—that is using tar sands to produce hydrogen that is a bit cleaner than it might otherwise have been. We just need to be aware that the context of this is still very underdeveloped, and technologically speaking, I would point out that electrolysis—in other words, producing hydrogen from electricity—is a more developed approach.

There is also a question about the economics. The analysis that I have seen suggests that by 2030 green hydrogen—that is, hydrogen that is produced from renewables just for the sake of producing it—will be cheaper than blue hydrogen. In fact, that particular analysis was before the gas price increase, so things will have changed even more, now that the gas price has gone up significantly. That means that investment decisions that are being made today might be undercut in 2030. As a result, I think that we will see only limited investment in blue hydrogen in, say, very specific places where a clear case for carbon capture can be made. After all, it relies on there being some sort of storage facility, so it

could involve industrial sites or be linked to fossil fuel extraction areas.

As for the heating question, there is an energy security angle to blue hydrogen that we have not really talked about yet, in that, because of losses in the process, you need more gas in the first place than you would have used if you were replacing gas with blue hydrogen. If anything, using blue hydrogen for heating would be an energy insecurity strategy, because you would be increasing your exposure to fossil gas. I was actually fairly staggered to read in the energy security strategy a couple of weeks ago about the potential for up to 5GW of blue hydrogen, as it does nothing for energy security. In fact, it actually weakens energy security.

Where, then, can we put it? As Tim Lord has said, there is a huge role for hydrogen in the UK and, indeed, in a net zero world, but you need to be very strategic about where you put it. Just dumping it into the gas grid, which seems to be what the UK Department for Business, Energy and Industrial Strategy is suggesting, would be incredibly inefficient and very expensive, and what you need to do is target it at the industries where it will have most value. Therefore, the job of the Government is to find out what industries use the hydrogen, and what they use it for, and work out how you can get it to them.

A huge chunk of it is actually used in fertiliser production; outside of the oil, gas and extraction industries, that is the world's biggest user of hydrogen. The fertiliser industry is therefore one to aim for, but there will be others that use it. Indeed, the other huge use is in seasonal storage. We are going to need something that balances out the energy system over the seasons of the year, and hydrogen is seen to be one of those things. With the potential for wind in Scotland—indeed, there has already been wind curtailment and excess generation—a case could sensibly be made for thinking about that particular strategic investment.

Mark Ruskell: I certainly do not think that we want an insecurity strategy at the moment.

Finally, do you see gas from fracking as having any bearing on energy supply and the cost of living crisis either now in the short term or in the long term in years to come? Do you have any quick thoughts on that, Tim?

Tim Lord: I will be very brief. It is worth going back to the original objective of such a strategy, which is about reducing prices and energy insecurity. Fracking will not have a big impact on prices. The UK makes up about less than 1 per cent of total global gas production, and the fact that the market is extremely well interconnected has had some advantages for us in the past. If we produce more gas, it will go straight into that market. All the analysis indicates that it is unlikely that that would have a significant impact on prices, unless you do things such as introduce price controls or export controls to keep it here in the UK, in which case you would almost certainly struggle to get any investors to get behind that because of the uncertainty that that would create.

10:30

It is obvious that there is a lot of heat—if you will forgive the pun—in the fracking debate, but it is really about whether it will help to achieve those objectives in the short, medium or long term. In that context, it feels a little like a red herring, particularly when you layer on top of that the challenges of delivering fracking at scale, given the need to bring communities on side. We know from plenty of polling evidence that fracking is less popular than a number of alternative technologies.

In some ways, there is too much heat in the debate, but the question is really whether fracking can contribute to the kinds of public policy outcomes that we are trying to achieve through our energy security strategy, and it is certainly not clear to me that it would.

Dr Lowes: I echo Tim Lord's points. I previously worked for Scotia Gas Networks and when we looked at the issue then, there was relatively little potential for fracking in Scotland—what there was lay in the more southern areas—so any Scottish impact would be limited.

The reality is that you could produce some gas from fracking if you wanted to, but there are significant environmental consequences of doing that that the industry does not talk about in relation to water use, waste and leakage of methane, which is another huge global issue. There would be a possible impact in terms of the quantities of gas produced, but the impact on price would be negligible, as the former boss of Cuadrilla Resources said.

Jackie Dunbar (Aberdeen Donside) (SNP): I realise that we are running out of time, so I will keep my questions brief. We heard earlier, I think from Dr Lowes, about what support folk should be offered as the price increase hits them. How significant will the impact of the increase in the cost of energy be on fuel poverty? How will the support that has been announced by the UK and Scottish Governments help, and could anything else be done?

Dr Lowes: There is a lot that could be done; it is a matter of political will. On what has been offered already, I think that the council tax rebate is an England-only measure—I am not sure about that; I would have to check. The loan on energy bills will only help people in the short term, so that

measure can in effect be discounted—it is a slight gimmick.

People simply need cash. That needs to be found however it can, because these are going to be very difficult times. An average household's gas bill might go up by two-and-a-half times by next winter, which is potentially an extra £1,000 of outgoings a year. At the same time, the price of food is going up, in part because of the energy price rise and in part because of other things, so, in the short term, people need cash support, and those people need to be identified.

I know that that sounds particularly grim for the first morning back at work after a holiday, but that is the sad reality. In the longer term, the Scottish Government has got it right on energy in relation to the package of measures that is available. The fact that you can get a grant and a loan at the same time to do up your house should be applauded. The long-term package is there but needs to be utilised more, and in the short term, cash needs to be available for those who most need it.

Jackie Dunbar: Dr Hannon, do you have anything to add? You mentioned a further rise to the price cap happening in the autumn. What will the impact of that be, and should any other measures be put in place?

Dr Hannon: Absolutely. As I said, Cornwall Insight is forecasting that, by 1 October, we could be looking at average dual fuel bills of £2,600. That is an additional £600-plus on top of where we are currently at.

The higher the cost of living and the cost of energy and everything else, the less disposable income that we have to invest in our homes to reduce our energy costs, so we find ourselves in quite a predicament in relation to the number 1 way of supporting the least wealthy families. The state needs to step in, most likely to support households that otherwise, before the energy crisis, were in a position to invest in a retrofit to reduce energy costs, whether it was simply loft insulation or a more comprehensive retrofit. National Energy Action predicts that, if energy bills reach £3,000 by 1 October, which is not impossible, 8.5 million homes in the UK could be fuel poor, which is more than double the current number.

We need increased funding for the energy supplier obligation—currently, ECO—and we need that funding to come online as soon as possible. That is problematic, because BEIS has just announced—on 1 April, I think—that it would increase the funding from £640 million to £1 billion, so about 450,000 homes in the UK would be supported with efficiency measures over those four years, or about 112,000 homes a year. Compared with what we were doing 10 years ago, that is about a tenth of the scale of deployment that we were achieving then.

We need to expand ECO; it needs to be an order of magnitude larger in size and, as I think Tim Lord pointed out earlier, that money needs to come online now. It should have come online when the October price cap rise hit last year, when this was already starting to happen. If we were serious about this, we could be insulating hundreds of thousands of homes UK-wide before the October price cap rise, because we were already doing that 10 years ago.

There are elements of ECO that are to be commended—for instance, there is a much greater focus on those who are fuel poor and on multiple measures that essentially involve a deeper retrofit. However, we cannot forget the people in the middle. Although they are not fuel poor, they are also feeling the pinch to the extent that they want to put in place those efficiency measures. What do we have in place to support those families, who are just about managing? There is a significant amount of effort to be made and, in terms of reserved powers, I do not know to what extent the Scottish Government has the powers to make a difference here—as I understand it, there is a UK policy for that, but pressure could be applied.

Jackie Dunbar: Thank you. As I said, I am trying to keep it brief, so I will just ask if Tim Lord has anything to add in relation to any of my questions.

Tim Lord: I have nothing to add, given the time.

The Convener: Monica Lennon has a supplementary question.

Monica Lennon (Central Scotland) (Lab): This has been a really interesting session so I have been quite happy to mostly listen. I was struck by one of the comments about the behaviour changes that people can make. I accept that there are things that we can all do, but it strikes me that we do not have a behaviour crisis here—it is a market crisis and a system crisis.

One view is that increasing democratic ownership of Scotland's energy resources could help to support local energy co-operatives and smaller energy companies. Do panel members have a view on the role that a Scottish publicly owned energy company could play in protecting consumers and the climate by providing clean, green and affordable energy? I know that people want to hear about immediate solutions so that we do not have bills of £3,000 a year, but if we think about what an energy system could look like in the medium to longer term, what could the Scottish Government be doing?

Dr Hannon: I know that public ownership has been discussed over the years, but in comparison with, say, community energy, we have not seen public ownership, whether at local, regional or devolved level, come to the fore. There is a lot to be said for a not-for-profit model, owned by the community or the public, or a blend of the two, in which profits are reinvested into the catchment area of the supplier in a way that supports the strategic aims of the individuals or organisations that own the company. In this case, that would be a combination of the Government and the people of Scotland, which seems to me to be a sensible strategy when we are dealing with the conjoined crises of energy and climate. There would be an opportunity for such an organisation to operate alongside other strategic bodies, such as the UK Infrastructure Bank or the Scottish National Investment Bank, which could invest in ways that would support the supplier to deliver cheaper, greener tariffs, as well as meet wider policy objectives.

I am conscious of time, so I will pause there to let the other panellists in.

Monica Lennon: Thank you. I am not getting any indication that other panellists want to chip in.

Liam Kerr (North East Scotland) (Con): Good morning, panel. I will direct my first question to Dr Lowes. I was quite surprised to hear you say that North Sea gas might run out by 2035. I presume that that is a reference to the North Sea Transition Authority's discussion of investment rather than reserves. I wonder if you would clarify that, before we set any hares running.

On that point, gas currently generates about 36 per cent of UK energy and, as I understand it, imported gas is the last unit bought to satisfy demand. That contributes to the overall price. Imported liquefied natural gas, for example from Qatar, has two to three times the carbon footprint of gas that is locally generated. Does it therefore stand to reason that one way to reduce energy prices and push us on the journey to net zero, while demand exists, is to ensure more domestic gas?

Dr Lowes: On your first point, my reference is to National Grid's figures in its "Future Energy Scenarios" report, which is publicly available. Those figures show a rapid decline in North Sea gas—which we have seen already—continuing as a straight line out to 2035 to 2040. I am not saying that it will be totally gone but, in those forecasts at least, it is expected to be at very low levels.

I have a concern about the idea of increasing investment in the short term, which is the risk around long-term impacts. If we go even more quickly for North Sea oil and gas extraction, I worry that we will end up in a situation where we are even more exposed, even more quickly. That is my fundamental concern about going even quicker. A more sensible approach might be a slower, more strategic extraction, to balance out, in the shorter term, our own supply and the risk of imports.

I am not sure that I quite agree that the last unit that we buy is always the imported one. If we look at the balance of gas imports and exports in the past six months, or even the past year, we have still been exporting plenty of gas, so it really is a global market. The price of a unit of gas reflects the global market, not the price of North Sea gas. I guess that a really simple way of seeing that is to look at the profits of some of the UK-based oil and gas extraction firms over the past year, because they have been effectively receiving income that they were not expecting to receive.

We need to think very carefully about gas imports. LNG, much of which has historically come from Qatar, is significantly higher carbon than UK-produced gas, and gas that we import from Norway. Further, what we have seen over the past couple of years, which has happened very quietly, is the importation of shale gas from the US as LNG.

That gas potentially has an even higher carbon footprint than that of the LNG that we import from Qatar. With all those sources of gas, balances and trade-offs need to be made.

This is a geopolitical issue like no other. However, I caution against the idea of going as quickly as you can for North Sea oil and gas, in case we make it run out even quicker.

10:45

Liam Kerr: Just for the avoidance of doubt, I point out that I was quoting figures from the Scottish Parliament information centre blog "Energy price crisis—impacts and remedies in Scotland".

My second question is for Tim Lord. Again according to SPICe, one of the key drivers of the recent increase in the wholesale price of gas was

"a relatively windless summer in 2021",

which

"made it difficult to generate wind energy".

Tim Lord said earlier that we need another reliable way to satisfy demand, and Dr Lowes referred to the National Grid's "Future Energy Scenarios", which specifically suggests that nuclear might be a significant part of our journey to net zero. What is your view, Tim? Is nuclear generation that reliable source? What impact could new nuclear have on the price for consumers if it can provide a reliable baseload?

Tim Lord: On your point about the wholesale price of gas last summer, I do not think that renewables performance impacted on that price. Renewables performance has a pretty marginal impact on the price in electricity markets at certain points relating to the steepness of the peaks in quite short windows, but clearly the key driver over the past 12 to 18 months was the wholesale price of gas, and that will be the case in the next 12 to 18 months.

On nuclear, it is clear that the cheapest and most net-zero-compatible UK electricity system over the next 30 years will be very renewables heavy, but that needs to operate in tandem with other technologies. People who work in energy circles will know that wind turbines do not work when the wind is not blowing and solar faces similar intermittency challenges, but those challenges can be managed. We need a suite of technologies to support that.

We are going to move from a position in which gas is the backbone of the energy system. As we heard, gas has provided between 35 and 43 per cent of energy for the past 20 or 30 years, and that is going to change. In electricity, offshore wind will increase and will be the backbone of the system, and the question is what works around that. You can have a combination of technologies. Storage has significant potential and is reducing in price, but clearly there are challenges with long-term storage. Green hydrogen can potentially play a role in the electricity generation sector as well. Nuclear absolutely has a role, because it brings different things to the system compared with renewables. Clearly, the unit price will be somewhat higher than that for renewables, but obviously nuclear provides reliability and other advantages that can complement renewables and other technologies quite well.

For me, the key thing about nuclear is not about how many gigawatts we think we will have in 2050; it is about what we will do in the next five to 10 years to deliver investment, given that we have not built any nuclear power stations in this country since 1995. We have to consider how we get investment in the next five or 10 years to get the supply chain moving and, we hope, to deliver the kinds of cost reductions that, for example, South Korea has had by taking a fleet approach to deploying new nuclear power.

Liam Kerr: I will stick with you, Tim, for my final question. Thank you for that interesting answer, in which you talked about the next five years on nuclear. You may not be able to answer the question, in which case, if any of the other panellists can do so, I would be grateful.

In January, I asked the Scottish Government what impact closing Hunterston B and Torness would have on consumer energy bills. The Scottish Government was unable to tell me, because apparently it has not modelled that. I went on to ask what the price is of electricity generated by Hunterston B and Torness, in an attempt to reverse engineer the answer. However, again, the Scottish Government does not know the answer to that, which I find rather surprising. Do you have that data, or could any of the other panel members source it? In any event, can you theorise what impact shutting those two generation stations in Scotland might have on consumer energy bills?

Tim Lord: I am afraid that I do not have that data. I have not looked into that question specifically but, on the broader point, the existing nuclear fleet is ageing. As you said, some nuclear stations have closed recently and most of the rest of them will close over the next 10 years or so, but I have not looked in any detail at the impact that that will have on consumer prices. I do not know whether any other members of the panel have done so.

Liam Kerr: Does either of the other two witnesses have anything to say on that? I appreciate that it is a slightly niche question.

I can see that Dr Hannon wants to come in.

Dr Hannon: It is not a direct answer to your question because, like Tim Lord, I do not have the data, but I would say that, if we remove nuclear energy from Scotland's energy supply, we will, by default, have to rely on other forms of baseload energy. Currently, without nuclear, our go-to is other fossil fuels, most notably gas, but coal has also occasionally come back on to the grid to support peaks. In addition, Scotland will rely more on nuclear outside Scotland but within the UK. Therefore, it will have to keep an eye on developments such as the energy security strategy, the significant support that is being provided for new nuclear and the costs that are likely to be incurred. There have been year-on-year delays and cost increases associated with Hinkley Point C.

Scotland needs some kind of baseload. Tim Lord pointed out some important technologies in that regard. We are developing tidal stream technology just off the coast of Orkney. There are opportunities there, as well as other forms of tidal range that could be located elsewhere in the UK. There are innovative forms of storage—the Scotland-based company Gravitricity has used former mine shafts for that.

An indirect cost of knocking nuclear off the system is having to support research and development to fund new technologies to fill that baseload gap.

Liam Kerr: I am grateful to all the witnesses.

The Convener: I bring in Natalie Don, who joins us remotely.

Natalie Don (Renfrewshire North and West) (SNP): Good morning. We have touched on a lot; I want to ask about the price cap. Dr Lowes, you have pointed out that people have not yet felt the full impact of high energy costs and that they will struggle when the colder weather comes in later in the year, especially given that prices are set to rise again.

Do the panellists think that the price cap that is set by the Office of Gas and Electricity Markets is fit for purpose? Will Ofgem's proposals to boost resilience in the energy sector, for example by introducing financial stress testing for suppliers and increasing the number of times a year the price cap can be adjusted, have a material impact on the market? I put that to Tim Lord, in the first instance.

Tim Lord: I think that we need to be careful about blaming too much on the price cap, as some people have done. When prices go up in such a way, consumers will feel pain, and politicians and Governments will need to think pretty hard about how to respond to that. As Richard Lowes said, in the short term, the price cap is, to a degree, protecting consumers from some of the volatility and, of course, the price rises.

Ofgem is right to look at whether the six-month window is the right window or whether there are circumstances in which the price cap should change more quickly. It is clear that there were issues around the financing and the forward contracting models—and, frankly, the financial stability—of some of the suppliers that were able to operate in the market when times were good, but which have gone out of business when times have been bad. With such price rises, it is inevitable that businesses in the sector will struggle, but there is a real question about whether we have enough resilience built into the system, so Ofgem is right to look at that.

I think it is possible for the price cap model to continue to work. I am in the camp in which I do not like it very much in principle but, in practice, it perhaps works better than the alternatives, as is often the case in the energy sector. The implication of your question is right—there are things that Ofgem can and should be doing to make the price cap work a little better for consumers, and to ensure that there is resilience and that the barriers to entry in the supply market are appropriate to protect consumers.

Natalie Don: I am not sure whether you have anything to add to that, Dr Hannon, but do you agree that the price cap should not be able to be lifted by more than a set percentage point in a particular financial year? I know that there has been some discussion about timescales in that respect, but would such an approach not provide some certainty to consumers? After all, the jump has been huge.

Dr Hannon: It is an important question with regard to certainty for consumers, but the fact is that the more certainty that consumers have on price, the less certainty some suppliers have on their financial operations and whether they can cover costs. I would therefore hesitate to take the sort of step that you have outlined without understanding the implications for suppliers. So many have already gone bust at an eye-watering cost, and consumers are carrying the can for that. The Office for Budget Responsibility has suggested that one of the UK's largest suppliers, Bulb, going bust will cost us £2.2 billion over the next couple of years, and that cost is being carried forward on to our bills today. We cannot adjust the price cap in a way that will lead to more suppliers going bust, as that will, by default, hurt consumers down the line when they have to pay for it.

I want to make another quick point. There is a joint issue with the price cap. On the negative side, it simply delays the inevitable pain of rising costs, because it means that we do not feel that straight away. On the positive side, however, it buys us time, but I feel that we have probably not used that time in the most effective way. Without echoing what I said earlier, I refer to my earlier point about investing in energy demand reduction now instead of waiting until autumn—which seems to be the Chancellor of the Exchequer's plan for his autumn statement—and seeing whether energy prices are still high then. The price cap going forward will reflect today's prices, so I encourage us to use the time that it gives us now wisely. Of course, that is why the committee is running this inquiry.

Natalie Don: I want to bring you in, too, Dr Lowes, but as a final supplementary, can you expand on the answers to my previous question by saying whether the price cap should be extended to regulate non-domestic customers such as those not on default tariffs or who are not on the gas grid and are heating their homes with fuel oil or petroleum instead?

Dr Lowes: First, it is worth thinking about why the price cap was introduced. It was meant to protect people from excess charges, particularly the so-called sticky customers who never switch. Despite the fact that it represents a significant intervention in what should be a private competitive market, it has had significant value in protecting the most exposed and vulnerable to bad practices.

I am slightly cautious about limiting cap rises, because I feel that it is almost an intervention too far. Fundamentally, you are asking whether the

market is no longer fit for purpose. I am not sure that that is the case, and if you were to limit price cap rises, you would be effectively forcing companies into bankruptcy, which would not be sensible.

That said, given the number of companies that have gone bankrupt at an average cost of £34 per person this year, some sort of tough regulation of companies is required. Evidence on hedging is also clearly needed, and companies need to show that they have bought enough power to ensure that they are not exposed to X level of risk. In some circumstances, that regulation has failed.

The households using fuel oil are often the forgotten ones, as they are often more rural and have no connection to the gas grid. The fact is that oil prices have at least doubled. The answer to your question, though, is yes—if some people are already being covered, you might expect others to get the same treatment. However, the oil market is very different from the gas market, and I do not know how it could be regulated. In fact, I think that that would be very difficult.

That said, regulating the market is more about targeting support and finding where people need the most help.

Enhanced support could be offered to oil customers, depending on the level of risk and exposure.

11:00

I would also highlight those people who are on prepayment meters, because they will be the most exposed and the most vulnerable. It is almost summer. People will not have the heating on and they will not have felt any of those price rises yet on their prepayment meters. Later in the year, when the heating comes on over October, November and December, is when the impacts will really be felt by those people who are on prepayment meters. Other people are on direct debits so those costs are spread across the year. I would therefore suggest some real consideration of enhanced support for people who are on prepayment meters, because they are the most exposed and they are generally the least able to take on that risk and the additional financial pressure.

Natalie Don: Thank you very much, Dr Lowes. I will pass back to the convener now.

The Convener: We are running slightly behind, but I would appreciate it if I could ask one final question of Tim Lord.

One of the requirements that you mention in relation to mobilising private capital to finance retrofitting and decarbonisation in the short term is the development of what you refer to as better investment frameworks. Given the critical need to mobilise that private capital into this sector, can you elaborate on the specifics of what you would like to see in terms of better investment vehicles?

Tim Lord: Sure. If you look across the economy at the investment requirement for net zero, as I mentioned earlier, there are different estimates, but they are all very large numbers. The ABI one is £2.7 trillion to 2035, UK-wide, and that is broadly comparable with the analyses from the CCC and others.

In the renewables sector, we have a really good investment set-up in terms of the contracts for difference scheme and we are seeing a virtuous circle emerging there. The Scottish Government has done the Scotland leasing rounds, so we have a really good project pipeline. We have an investable instrument and a low cost of capital that translates into low costs for consumers, so we have created a virtuous circle. Essentially, we need to replicate that virtuous circle in other sectors such as CCS, hydrogen and electricity networks.

I do not think that there is a silver bullet in relation to how you deliver that investment framework. In some ways, it is easier in the power sector when you are dealing with large infrastructure projects that are built by people whose job it is to build large infrastructure projects. The home owner does not see their role in life as deciding what their heating system should be, so there are different challenges there.

However, first, we need more clarity of direction around where we are going on heating policy so that we know which combination of technologies we are using in different parts of the country, for example, with a bit more specificity than we do at the moment. Secondly, we need to create the conditions for that through better consumer information and so on, as I talked about earlier. Thirdly, we need to think really carefully about how and where we use Government funding to pump-prime private investors to be able to come in at scale.

We need to do that in two ways; one is around how we reduce the cost of capital for consumers. One of the reasons why the green deal failed a decade or so ago was because the cost of loans for consumers was 8 to 10 per cent. Government does not have to pay for everyone and it certainly should not be paying the full cost of improving energy efficiency or decarbonising heating for the more well-off, but it can help to reduce that cost of capital and then enable private capital to flow in behind it. We also need to look at this in a regional and localised way. I think that the committee has looked at this question before in relation to different local authorities and how we could package some of those retrofit programmes in

ways that enable larger-scale work, which again can bring in big, institutional investors.

There is genuine willingness in the financial services sector now to provide that capital, as well as genuine recognition that this is the key growth area of the economy and a genuine appreciation that, for our customers, this is the right way to go. However, at the moment, the investment vehicles are not quite there. That can be solved and it does not have to be solved by the Government paying for everything; it can be solved by the Government setting the framework in a slightly different way.

The Convener: Thank you very much, Tim, and thank you, Dr Hannon and Dr Lowes. That brings us to the end of our allocated time. It has been an excellent session—you have raised a number of challenges and a number of potential solutions. We very much appreciate your time this morning. We will now move into private session.

Thank you again and enjoy the rest of your day.

11:04

Meeting continued in private until 12:28.

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