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Scottish Parliament

Thursday 1 June 2023

[The Presiding Officer opened the meeting at 11:40]

General Question Time

The Presiding Officer (Alison Johnstone): Good morning. The first item of business is general question time.

Domestic Abuse (Scotland) Act 2018

1. **Fulton MacGregor (Coatbridge and Chryston) (SNP):** To ask the Scottish Government what its position is on whether the Domestic Abuse (Scotland) Act 2018 has assisted the police in responding to reports of coercive control and stalking behaviours from members of the public. (S6O-02316)

The Cabinet Secretary for Justice and Home Affairs (Angela Constance): Research on the operation of our groundbreaking legislation found that it better reflects how adult victims experience domestic abuse. Police Scotland is committed to supporting effective and consistent implementation, and staff and officers have had training and support to ensure that they fully understand the legislation and how to best use it to protect victims and bring offenders to justice.

Recent reports have highlighted that more is needed to make it easier for people to report domestic abuse and for perpetrators to be appropriately dealt with. I am committed to working with partners to consider how we best address that.

Fulton MacGregor: I thank the cabinet secretary for that very positive response. In recent months, I have had contact with a constituent who reports continuing harassment from an ex-partner through the use of Ring doorbells, although not on her property. She further reports that the police dealing with her case seemed unsure how to take forward complaints regarding Ring doorbells, although they are extremely sympathetic to the overall situation. Will the cabinet secretary advise whether the current legislation on coercive control could include such behaviours, including the use of Ring doorbells, and, if so, what further training might be necessary for front-line workers?

Angela Constance: Domestic closed-circuit television, such as video doorbells, is covered by data protection legislation, which is a matter that is reserved to the United Kingdom Government and is regulated by the Information Commissioner's Office. If an individual believes that domestic

CCTV is being used in a way that is antisocial, harassing or intimidating, it might be a criminal matter, and they can contact the police.

There is more work to be done—and which I am committed to exploring—in and around the use of data. Despite the strategic shift in policing to prioritise, understand and tackle domestic abuse, with lots of examples of good practice, we know from all the most recent research that the clear message is that improvements could be made across the justice sector to how cases are handled. We need to give victims maximum assurance that their voice is being heard in proceedings and ensure that support throughout the process is more available.

Pam Gosal (West Scotland) (Con): Parties across this chamber agreed with the 2018 act, but, for the act to be truly effective, the police need more resources. As it stands, front-line officers do not have the support that they need from the Government to fully enforce the new law. Given the rise in domestic abuse cases since the act was brought in, does the cabinet secretary accept that the police need more resources to deal with more domestic abuse crimes?

Angela Constance: The most recent domestic abuse crime statistics show a decrease of 1 per cent on previous years, but I agree with the member that those figures are a stark reminder of the gendered and hidden nature of domestic abuse and that we need to be committed to tackling the systemic issue in our society, today, tomorrow and in the long run.

On the issue of resources for the police, the policing investment this financial year is £1.45 billion, which is an additional £80 million—or an increase of 6.3 per cent. Across the justice sector, we are investing £3.4 billion, which is an increase of £165 million. That investment is being put to good use to deliver justice for women.

Financial Memoranda (Drafting)

2. **Michael Marra (North East Scotland) (Lab):** To ask the Scottish Government whether it plans to review its approach to drafting financial memoranda, in light of concerns raised by the Finance and Public Administration Committee. (S6O-02317)

The Deputy First Minister and Cabinet Secretary for Finance (Shona Robison): The Scottish Government endeavours to provide its best estimates of anticipated costs and/or savings in the financial memoranda that accompany bills, in line with the requirements of standing orders. The Scottish Government is also committed to responding to any issues identified by Parliament in its scrutiny of bills and their accompanying documents.

Michael Marra: Last week, the Deputy First Minister admitted that her Government had managed the public's money so poorly that there is a looming £1.9 billion black hole in the public finances. Is that any wonder, when the Government's approach to drafting financial memoranda is so woefully inadequate? Given the serious concerns raised by the committee about the financial memoranda for two significant pieces of legislation—the National Care Service (Scotland) Bill and the Children (Care and Justice) (Scotland) Bill—why does the Government not think it necessary to publish a revised financial memorandum for either bill before the conclusion of stage 1?

Shona Robison: Michael Marra has just commented on my statement on the medium-term financial strategy last week, but if he had been listening to what I said in that, he would have heard—and this has been confirmed by the Scottish Fiscal Commission—the key reasons for the challenge in next year's budget, the first of which is the United Kingdom Government's cuts to both resource and capital budgets to this Parliament. Michael Marra should know that those budgets make up the bulk of the money that this Parliament—this Government—has to spend. Secondly, there are challenges due to inflation and its impact on our budget—and, of course, the impact on the pay deals that go beyond what was budgeted for in last year's budget. Michael Marra should stick to the facts about what lies behind the statement that I had to make last week.

On issues with financial memoranda, we, of course, welcome the Finance and Public Administration Committee's feedback and the views coming forward at stage 1 of the Children (Care and Justice) (Scotland) Bill. The issue, really, is that matters have developed in relation to the financial memorandum. Inflation has increased, which, as the committee has acknowledged, the Scottish Government could not have forecast that. The stage 1 process has brought in additional detail and helpful information—that is, of course, part of the bill process—and the financial memorandum will be updated on the basis of what happens at stage 1 and the updated information from partners involved in the bill's implementation group. We will update the financial memorandum following that work and to reflect what happens at stage 1.

As for the National Care Service (Scotland) Bill, the Minister for Social Care, Mental Wellbeing and Sport has agreed to provide an updated financial memorandum, as well as a response to the recommendations of the report, four weeks before the stage 1 debate. That will, of course, take account of any agreements and decisions that are reached over the summer.

Single-use Vapes (Environmental Impact)

3. Stuart McMillan (Greenock and Inverclyde) (SNP): To ask the Scottish Government when it plans to publish the review by Zero Waste Scotland into the environmental impact of single-use vapes. (S6O-02318)

The Minister for Green Skills, Circular Economy and Biodiversity (Lorna Slater): The Scottish Government recognises the significant concerns about the environmental impacts of single-use vapes, as well as about the prevalence of young people vaping in Scottish society.

On the environmental impacts, Zero Waste Scotland submitted the initial findings of its report on the impact of single-use vapes at the end of May. Those findings are currently being considered, and the report is undergoing final revisions prior to publication, which we expect to take place in June. I look forward to the report's findings being published and the opportunity to discuss potential next steps to address the issue.

Stuart McMillan: The minister will be aware of a recent BBC report on 18 vape products that were found in a school in England, almost all of which had not been legally registered or tested. When they were sent for independent testing, they were found to contain highly toxic chemicals such as crotonaldehyde in concentrations well above the recognised safe exposure levels, in addition to heavy metals such as lead, chromium and cadmium. What work is being done across Government to tackle the damage that these devices are doing, not only to the environment but to our young people's health?

Lorna Slater: I am deeply concerned about recent reports of illicit vapes containing high levels of lead, nickel and chromium. United Kingdom-wide regulations are in place to ensure minimum standards for the safety and quality of e-cigarettes. Through the Society of Chief Officers of Trading Standards in Scotland, we continue to support strong national and local alliances to tackle the availability and sale to under-18s of illicit tobacco and vapes. Any action that we seek to take will build on the regulations that are already in place to restrict the marketing, promotion and sale of vaping products to under-18s.

Beatrice Wishart (Shetland Islands) (LD): I have received representations from a young person in Shetland who has concerns about the impacts of vaping on health and the environment as well as the impact of peer pressure in that respect. Flavours such as bubble gum and candy floss and bright rainbow packaging on shop counters are not there to catch the eye of adults. When I spoke with my constituent this morning, they said that they wanted to see vapes removed from sale on shop counters. Will the Scottish

Government review regulations on vape sales, packaging and advertising?

Lorna Slater: The report from Zero Waste Scotland will look at a range of available policy options including a potential ban on single-use vapes. I am fully aware of the strength of feeling on the matter and, particularly, of concerns around young people's use of vapes. Powerful campaigns for a ban have been undertaken by Less Waste Laura, the *Daily Record* and others, and the review will consider various options—for example, increasing access to responsible disposal options and improved product design. I look forward to the review coming out, and we will discuss next steps from there.

Tourism, Hospitality and Leisure Support (South Scotland)

4. Craig Hoy (South Scotland) (Con): To ask the Scottish Government what additional support it plans to provide to tourism, hospitality and leisure operators in the South Scotland region. (S6O-02319)

The Minister for Small Business, Innovation and Trade (Richard Lochhead): The Scottish Government recognises that the tourism, hospitality and leisure sectors are a crucial part of the South Scotland economy. Those sectors create jobs, sustain communities and contribute significantly to the wellbeing of southern Scotland, often forming the cornerstone of the local economy and enabling visitors and residents alike to experience the incredible offers that we have across the whole region.

We are supporting, with a £2.7 million five-year funding package, the South of Scotland Destination Alliance, which is an industry-led leadership group that is driving the region's tourism, marketing and destination development. We are also working with a diverse range of businesses throughout the region. As well as our work with large projects, including our £2.6 million investment in the £18 million sustainable development in Forest Holiday cabins at Glentress forest in the Tweed valley, we are working with different accommodation and attractions in the region, from glamping to museums and visitor facilities.

Craig Hoy: I thank the minister for that answer, but all that he has said overlooks the fact that, as he is well aware, many operators face far higher business rates as a result of his Government's failure to pass on the 75 per cent rates relief that has been made available in England. Pubs and cafes face enormous pressures, including from the shambolic deposit return scheme, while tourism operators face the burden of the Scottish National Party's short-term lets regulations. Is it not the case that the SNP lacks not only a dedicated

minister for tourism but any credible policy to support that vital sector in the south of Scotland?

Richard Lochhead: As the minister with responsibility for tourism and hospitality, I want to say how much I enjoyed my recent visit to Glentress to meet the company that is investing millions of pounds into that region. It is great to see that the product that is being developed in the member's region is attracting so much investment and will attract visitors from around the world. Although I recognise that the Scottish Government has a role to play in that regard, a sub-group relating to the new business deal will look at business rates and other issues.

The issues that tourism businesses in the south of Scotland and elsewhere raise with me are high energy costs, the need to cut VAT, the impact of high inflation and the impact of Brexit on labour shortages, all of which are the responsibility of the member's party in the United Kingdom Government—the Conservative Party. Therefore, he might likewise wish to make strong representations to it.

Emma Harper (South Scotland) (SNP): The minister mentioned energy costs. The impact of the energy crisis on hospitality—on pubs, bars and restaurants, including those across the South Scotland region—has been substantial, with trade bodies recently revealing that bills have surged by, on average, 81 per cent over the past year. Can the minister provide an update on the Scottish Government's latest engagement with the UK Government regarding the support that can be provided to businesses that are experiencing those pressures with energy costs? Does he anticipate that further support will be forthcoming?

The Presiding Officer: We must have brief questions and brief responses.

Richard Lochhead: We certainly share the industry's concerns, which Emma Harper raised, about the impact of rising overheads such as energy costs. We have extended energy advice to businesses by investing £300,000 to expand the services of Business Energy Scotland, and we have doubled the value of the small and medium-sized enterprise loan and cashback scheme for energy efficiency to £20,000. We have also established a task force with the Convention of Scottish Local Authorities to support businesses, because we know that much more needs to be done.

In relation to rising energy costs, the Minister for Energy is due to meet the UK Minister for Energy Consumers and Affordability next week and will raise that important issue with her at that time. We will continue to make strong representations to the UK Government in relation to addressing high energy costs.

Ferguson Marine (Future Options)

5. Graham Simpson (Central Scotland) (Con): To ask the Scottish Government what options it foresees for the future of Ferguson Marine after ferries 801 and 802 are built. (S6O-02320)

The Cabinet Secretary for Wellbeing Economy, Fair Work and Energy (Neil Gray): We know that Ferguson Marine is actively pursuing many future workstreams, such as the recently announced contract with BAE Systems to support the type 26 frigate programme. We are committed to securing a sustainable future for the shipyard.

Graham Simpson: Well, I would thank the cabinet secretary for that answer, but it was not an answer. He did not answer the question, which was on the options that he sees for the future—I do not know what options he foresees. If he wants to return the yard to the private sector, as he has said that he does, investment will be needed. Has he done an assessment of how much investment will be needed?

The Scottish Government has commissioned an independent review into funding and future options for the yard. When will we see that?

Neil Gray: Ferguson Marine has provided the Scottish Government with a formal request for capital investment as part of its plan to make the shipyard more competitive, which is currently being evaluated. Any request for funding will, of course, be subject to subsidy control and the impact and other assessments that will be required. Parliament will be updated on that in due course.

In relation to the publication of the document to which Graham Simpson referred, I am sure that he would not want to make the yard uncompetitive by releasing the commercially sensitive information that the document contains. We are looking at the detail that we can publish. That work is on-going.

Katy Clark (West Scotland) (Lab): Does the cabinet secretary accept that it is the Scottish Government's responsibility to clear up this mess? It is not the fault of the excellent workforce at Ferguson Marine or, indeed, that of the people of Inverclyde. Will the cabinet secretary provide a timescale for potential future ferry contracts after 801 and 802?

Neil Gray: As I have done every time that I have appeared either before committee or in the chamber, I pay tribute to the workforce for the outstanding work that it is doing in incredibly difficult circumstances.

We have taken decisions to ensure that 801 and 802 continue to be progressed and are completed

at the yard, and we will continue to support the yard to secure future work as best we can.

Learning Estate Investment Programme

6. Paul O'Kane (West Scotland) (Lab): To ask the Scottish Government whether it will provide an update on phase 3 of the learning estate investment programme, including in relation to the planned date for the announcement of the successful projects. (S6O-02321)

The Cabinet Secretary for Education and Skills (Jenny Gilruth): I know that local authorities are keen to get clarity on phase 3 of the learning estate investment programme. I recently visited the Perth high school and Dunfermline learning campus projects, and I very much recognise the difference that LEIP projects will make to local areas.

In March, Scottish Government officials wrote to all local authorities to explain that consideration of the projects that will form part of phase 3 was still on-going. That correspondence set out that further time was necessary to consider the scope of phase 3 and to take account of the impact of market volatility on current projects. However, I am committed to announcing the successful phase 3 projects before the end of this parliamentary session.

Paul O'Kane: It is clear that Parliament needs to see details of phase 3 of the learning estate investment programme, which is now overdue. Too many schools across Scotland are currently in desperate need of upgrading.

As the cabinet secretary will be aware, it has been estimated that it could cost up to £160 million to rectify Renfrewshire Council's monumental error in the calculation of the school roll for the new Dargavel primary school in Bishopton. Indeed, in answer to my colleague Neil Bibby, the First Minister said that the cabinet secretary would enter into discussions with Renfrewshire Council to try to resolve the situation and to avoid any detriment to the learning resource that is available to the council. Can she confirm whether those discussions have taken place? Can she assure members that there will be no detriment to the learning estate investment fund allocations to Renfrewshire in order to resolve the error, given the need for new schools across the local authority area?

Jenny Gilruth: Mr O'Kane might not be aware that his colleague Neil Bibby raised that issue yesterday during the debate on the national discussion, and that I committed to meeting him and parents in relation to the school that Mr O'Kane mentioned. I know that officials are already engaging with the local authority, and I intend to do the same imminently.

I wish to put on the record the fact that, since the Scottish National Party came to power, we have invested significantly in our school estate. When the SNP first came to power back in 2007, only 61 per cent of our schools were in good or satisfactory condition; today, that figure is more than 90 per cent. That is real progress under this Government. There is undoubtedly more that we will need to do, and I look forward to working with Paul O’Kane to drive the improvements that are needed across our school estate.

First Minister’s Question Time

12:00

Low-emission Zones (Glasgow)

1. Douglas Ross (Highlands and Islands (Con)): Today, a low-emission zone came into force in Glasgow. It will prevent many vehicles from entering the city centre and, if a driver breaks the rules, they could face hefty fines into hundreds of pounds. Can the First Minister tell us how many vehicles applied for an exemption to the scheme but were refused?

The First Minister (Humza Yousaf): This is, of course, a scheme that is run by Glasgow City Council and one that I am very supportive of. The whole Parliament should be supportive of the low-emission zones, because we know that air pollution is a serious problem, particularly in our city conurbations and particularly in Glasgow. That is why the introduction of the LEZ has been welcomed by the likes of Asthma and Lung UK, as well as many other third sector organisations with an interest in public health.

I do not have to hand the exact figure that Douglas Ross has asked for, but I know that an LEZ exemptions process has been put in place and that a number of time-limited exemptions have been granted.

I hope that, in his questioning, Douglas Ross will be unequivocal in his support for LEZs, because, every single week, members of the Parliament rightly question the Government on what more we can do to tackle the climate emergency. In the case of Conservative members, every time that we—or a local authority—introduce a measure, they oppose it, time and again. It is critical for all of us who believe in tackling the climate emergency as a priority that we do not just talk the talk and that we are prepared to walk the walk.

Douglas Ross: I really hope that the First Minister will start answering questions rather than telling Opposition leaders what they should be asking.

As usual with the Scottish National Party, the problem with the policy is its delivery. There have been numerous warnings about the implementation from people and organisations across Scotland. *[Interruption.]* SNP members are saying that that is an exaggeration, so let us just look at one of the many charities that are raising concerns. *[Interruption.]* Joe FitzPatrick, a Government minister, wants to shout me down while I am speaking about a charity in Glasgow that is raising concerns—

The Presiding Officer (Alison Johnstone): Members!

Douglas Ross: —so perhaps Joe FitzPatrick, the First Minister and SNP members will listen to what Homeless Project Scotland has said. It was refused an exemption—[*Interruption.*] And still they heckle. Homeless Project Scotland was refused an exemption to use a refrigerated van within the restricted area. Its chairman, Colin McInnes, said that it helps to feed 300 people every day. It collects food from 15 to 20 businesses in the city centre, right at the heart of the low-emission zone.

Colin McInnes's message to the council was simple: exemptions for exceptional circumstances must be reviewed. He continued:

"if 300 people queuing for many hours for food on the streets of Glasgow is not exceptional, then they need to publish what is exceptional."

Does Humza Yousaf agree that that outstanding charity deserves an exemption from the scheme?

The First Minister: I commend the work that is done by Homeless Project Scotland in Glasgow. Of course, we have to ask ourselves why it is having to feed so many people in any given week. That is undoubtedly the case because of more than a decade of Tory austerity, because of a cost of living crisis, because of high inflation and because of high energy costs. That is why it is having to do that work.

I would urge Glasgow City Council—as it has already done, to my understanding—to engage with the third sector and charities, including Homeless Project Scotland. However, the council has been very transparent. The application process for time-limited exemptions is published on the Glasgow City Council website. There has been a lead-in time for the introduction of the LEZ. There is an exemption process.

It is imperative that all of us—whether that is the public in Glasgow, charities, the third sector or any of us—ensure that we are doing everything possible in our gift to tackle the serious problems of air pollution.

I go back to what I said in my first answer. Time and again, Douglas Ross will demand that we do more to tackle the climate emergency, but whether we are talking about the deposit return scheme, the workplace parking levy or LEZs, he will oppose it. Why will he oppose it? He will do so, of course, not because of any principled stance in relation to the climate emergency; he opposes such measures simply because the SNP has proposed them, and that is not good enough.

Douglas Ross: I oppose the SNP making a shambolic mess of every one of the schemes that it brings in.

The First Minister wants to commend Homeless Project Scotland but refuses to say that its one van, which helps to feed 300 people every day, should get an exemption. That is not commending a charity; that is condemning it to being unable to do the work that it wants to do. The delivery of the LEZ scheme in Glasgow has been tone deaf to the needs of the city and charities such as Homeless Project Scotland.

SNP members wanted to heckle me when I spoke about charities. Will they do the same when I read out quotes from businesses? [*Interruption.*] Now it is cabinet secretaries who do not want to hear what businesses in Glasgow think. I know that Jenny Gilruth used to be the transport minister, but she should be listening to the points that I am making.

The Presiding Officer: Mr Ross, please continue.

Douglas Ross: Businesses are saying this to politicians across the political spectrum, and SNP members think that it is funny. [*Interruption.*] It is funny when the health secretary is laughing at this.

Let us listen. Steven Grant of Unite Glasgow taxi drivers said:

"This damaging and punitive plan is going to be devastating for our trade, without a shadow of a doubt."

Local business owner William Paton, who runs a garage within the restricted zone, said:

"It just feels like it's been poorly thought out and we're left in a horrible position because of it."

Stuart Patrick, chief executive officer of Glasgow Chamber of Commerce, said:

"while we have supported the aims of the LEZ, the Chamber does not support using it as a political measure to drive all private cars from the city centre."

This morning, Donald MacLeod of the Night Time Industries Association, said:

"actually, what we've got here is a low economy zone getting created."

He is right, is he not?

What does Humza Yousaf have to say to all those businesses and all their workers, who are concerned that the LEZ scheme will put jobs at risk?

The First Minister: First and foremost, I go back to the point that there has been a considerable lead-in time for the Glasgow LEZ coming into place. There has been extensive engagement—[*Interruption.*] Oh! It is fine for Douglas Ross to dish it out, but he cannot take it when he is asking his questions.

Let me give Douglas Ross some of the facts around the LEZ in Glasgow. It has had a lengthy and extensive lead-in time, and there has been

considerable engagement with businesses, the community, the third sector and charities. To help low-income households and small businesses to get prepared for the scheme, the LEZ support fund offered financial support towards the disposal of non-LEZ-compliant vehicles. In 2020-21, the LEZ support fund awarded £1.7 million in grants. In 2021-22, it awarded £3.85 million. In 2022-23, it awarded £5 million. Although that fund has now closed, those who were eligible were encouraged to register an interest. The fund resulted in more than 2,500 non-LEZ-compliant vehicles being disposed of or retrofitted with cleaner technology. Funding has been provided not just for low-income households but for small businesses as well.

When it comes to tackling the climate emergency, which all of us in Parliament claim to have an interest in and claim to say is a priority, the warm words and the rhetoric are the easy part; the hard bit is taking action. This Government will never shy away from—nor should our local authorities—taking the tough action that is required in order to tackle the biggest threat that our planet faces.

Douglas Ross: The only thing that that answer proved is that it took until question 3 for Humza Yousaf to find his pre-prepared script on the issue in his folder.

The LEZ scheme is the latest anti-driver policy from the SNP—*[Interruption.]*

The Presiding Officer: Thank you.

Douglas Ross: —that looks like being a shambles in the making. The SNP has cut investment in roads; it is not tackling Scotland's pothole problem; it does not support car drivers—*[Interruption.]*

The Presiding Officer: Members!

Douglas Ross: —it has proposed a car park tax and is increasing the cost of driving across Scotland.

Approximately three quarters of a million vehicles in Scotland will now be fined if they drive through the zone in Glasgow. The LEZ is damaging charities' ability to function. It is threatening jobs, and business leaders think that it is going to create a low-economy zone.

Would it not have been better to delay the scheme for a year and to listen properly to the businesses, charities, individuals and organisations that have been raising concerns and hoping for a change but have been left with no answers, no response and a tone-deaf Government that refuses to listen to them?

The First Minister: If we had delayed, more people would have suffered in the meantime because of asthma or lung conditions; more

people would have suffered cardiopulmonary disease—*[Interruption.]*

The Presiding Officer: Members!

The First Minister: —and more of Glasgow's citizens would have suffered dire health consequences. We know that air pollution in Glasgow is nowhere near the standard that we want it to meet, and the LEZ will help with that.

It is undeniable that, every time the SNP Government brings forward action to tackle the biggest threat that our planet faces, Douglas Ross and the Conservatives oppose that time and again. They opposed the workplace parking levy and oppose the DRS, even though that was in the manifesto that they stood on. Douglas Ross stood on a manifesto that included a deposit return scheme but now opposes it.

When we look to invest and to unleash the potential of the green economy in the north-east, what do we get from the Tory UK Government? We get complete and utter inaction. There is not a single penny of funding towards the Scottish cluster—*[Interruption.]*

The Presiding Officer: Members!

The First Minister: —or the Acorn project or to support the green economy.

The Presiding Officer: Please sit down, First Minister.

Members, we are not going to continue in this vein. We are representatives of the people of Scotland and we are sitting in the national Parliament. I would be very grateful if all those who are tuning in could hear both answers and questions.

The First Minister: The Tories do not want to hear about the fact that they have been utterly missing in any action to tackle the climate emergency here in Scotland.

I end by saying this to the Conservatives. When it comes to tackling the climate emergency, whether that is by using LEZs or the DRS, the real potential for Scotland both in tackling the climate emergency and from an economic point of view will come from unleashing the green potential of the north-east and of the rest of Scotland. The Conservative Party has plundered £300 billion of revenue from the north-east; the least that it could do is to match our £500 million just transition fund and help us to tackle the climate emergency that is affecting the globe and is the biggest priority and the biggest threat that this country, and the world, faces.

Waiting Lists (National Health Service)

2. Anas Sarwar (Glasgow) (Lab): Can the First Minister tell us how many Scots died last year while languishing on national health service waiting lists?

The First Minister (Humza Yousaf): I do not have that figure to hand, but I say from the off, as First Minister, that I do not want a single person to have to wait longer than is necessary. I apologise to anyone who is unnecessarily on a waiting list for treatment.

I hope that most people will recognise and acknowledge the significant impact of the pandemic, which has been the biggest challenge that our NHS has ever faced in its almost 75-year existence.

We are making some progress in relation to the targets to reduce waiting times for both out-patients and in-patients, but I would certainly be the first to recognise that we must do more. That is why the recovery of our NHS is a significant priority—it is the priority—for this Government, and it is why we are investing a record £19 billion this year to help the NHS to recover and to reduce waiting lists.

Anas Sarwar: The number that the First Minister is looking for is 18,390. More than 18,000 families have a loved one who died waiting for treatment that could have prolonged or, in some cases, saved their life.

In 2017, 7,868 Scots died while on an NHS waiting list. Immediately before Covid, the figure was 13,211. If the current trend continues, the figure will be over 20,000 this year. Those are not just numbers; they are people waiting in pain, and many are dying far too early, leaving behind heartbroken families.

As health secretary, Humza Yousaf failed to get a grip on NHS waiting lists. On his watch, they grew by over 175,000. Nearly two years ago, he published a recovery plan for the NHS. Since then, things have got worse. Can the First Minister tell us clearly when his Government will meet the legal treatment time guarantee, so that fewer Scots lose their lives?

The First Minister: I say to Anas Sarwar that he is, of course, absolutely right to raise the issue of waiting lists and the fact that they have increased throughout the course of the pandemic. I cannot escape—and will not escape—that matter of fact, but the pandemic is not just a fleeting matter. It is not a matter that can just be mentioned and then not fully explored in terms of the clear impact that it has had.

There is no doubt that the pandemic has been the biggest shock that the NHS and health services in Europe and globally have faced. That

is not unique to Scotland. Of course, I am responsible and we are responsible for the health service here, in Scotland, but the pandemic has clearly impacted on health services right across the UK.

We are making progress in relation to the recovery plan that Anas Sarwar mentioned. For example, if we look at the out-patient two-year waits, we see that numbers are down by 19 per cent from the last quarter and, crucially, down by almost 70 per cent from quarter 2 of 2022. On those who are waiting a year, or 12 months, we know that, since the target was introduced in quarter 3 of 2022, the number of new out-patients has reduced by over 15 per cent.

If we look at in-patients, we see similar decreases. If we look at in-patient day cases and those who have waited over two years, we see that those numbers have significantly reduced—by 27 per cent—since those targets were announced. We see a similar pattern of improvement in relation to diagnostics as well.

We are making progress in relation to those targets, and we are investing record sums in our NHS recovery and, indeed, our social care recovery. However, I have always been up front, when I was the health secretary and in my current role as First Minister, about the fact that the recovery of the NHS will take not weeks or months, but years. That is why we have the five-year recovery plan. I am absolutely committed to ensuring that we continue to see progress against that and that there is record investment alongside it.

Anas Sarwar: As health secretary, Humza Yousaf said that he would have eradicated two-year waits by now. He has patently failed. Things were getting worse before Covid and things have got a lot worse in the two years since he published his NHS catch-up plan. Grieving families will see through those excuses.

However, that is not even the full picture. According to freedom of information responses, thousands of people are being forced to leave the NHS and pay for their treatment in the middle of a cost of living crisis. In one health board alone, the number quadrupled between 2019 and 2023, and the number of people without insurance who pay for private treatment has increased by 73 per cent since before the pandemic.

Our NHS was built on the principle of healthcare being free at the point of need. That is clearly no longer the case for thousands of people in Scotland. Does the First Minister accept that his incompetence has created a two-tier NHS in which people are forced either to go into debt in order to stop the pain and get the treatment they need or to languish on an NHS waiting list?

The First Minister: No, I do not agree with Anas Sarwar's characterisation. I will come to why in a second. It was not a list of excuses that I read out. I read out a list of facts. I read out some of the data—some of the statistics—around some of the progress that has been made.

That is not to take away from individuals right across this country who are waiting far too long. We know that waiting on a waiting list can have significant and severe consequences. That is why, for example, we are investing in our national treatment centres. We have four of those opening this year. A couple of them have already opened, and, in a couple of weeks' time, I will be pleased to officially open NTC Highland. We will have NTC Forth Valley and the second phase of NHS Golden Jubilee opening later this year. That will give us additional capacity.

We know that NTC Fife's plans include 500 orthopaedic procedures this year, rising to more than 700 by 2025-26. In the first year of opening, the first of the national treatment centres—the national eye centre at NHS Golden Jubilee—delivered almost 9,000 cataract procedures. We are investing in that additional capacity.

When it comes to the use of private healthcare, I do not want anybody to feel that their only choice is to go to private healthcare. However, to address Anas Sarwar's point, such a situation is not because the Scottish National Party is in Government, nor is it unique to Scotland. The situation affects health services right across the United Kingdom.

To take private healthcare as an example, the rate of people who are self-funding for private in-patient day-case care is 19.9 per cent higher in England than it is here. In Wales, it is more than 120 per cent higher than in Scotland. We know, therefore, that these issues are affecting people right across the UK. The reason for that is the pandemic.

We will continue not just to invest in the NHS but to make sure that our staff are the best paid in the UK, that we do not lose days to strikes—of course, Scotland was the only part of the UK to ensure that not a single day in the NHS was lost to strikes over the course of the winter—and that we do everything that we can to fill those vacancies.

However, there can be no NHS recovery without a social care recovery. What has not helped social care, of course, is Brexit, whereby many staff have left social care because of the hard Brexit that has been imposed on Scotland. I will continue to make sure that record amounts are invested in the recovery of both our NHS and social care.

Protecting Scotland's Environment

3. Ariane Burgess (Highlands and Islands) (Green): To ask the First Minister what priority the Scottish Government gives to protecting Scotland's environment. (S6F-02180)

The First Minister (Humza Yousaf): Scotland's natural environment is central to our identity as a nation. It is fundamental to our health, our quality of life and our economy. This year, we are investing nearly £1 billion in our natural environment. We remain committed to working with our partners in the Green group on the priorities for net zero and for nature that are set out clearly in the Bute house agreement. I and my Government are fully committed to protecting and enhancing Scotland's environment.

However, progress depends on our being able to use the powers that are fully devolved to the Parliament. Just this week, we have seen the United Kingdom Government's determination to ride roughshod over a measure to improve recycling and dramatically reduce litter by seeking to sabotage regulations that this Parliament passed on bottle and can recycling. That is simply unacceptable.

Ariane Burgess: Handing on a clean and nature-rich environment to future generations is one of the biggest responsibilities of Government, so it is astonishing to hear that the UK Government is, on a whim, undermining our Parliament's effort to reduce litter and improve recycling by aiming to sabotage Scotland's deposit return scheme. Given that the Tory UK Government was elected on a manifesto commitment to have a scheme that included glass, and given that Labour in Wales has joined Scotland in our shared commitment to a scheme with glass, does the First Minister believe that all members should listen to the evidence, listen to their own promises and colleagues, and let Scotland get on with the job for which the Parliament voted?

The First Minister: Ariane Burgess is absolutely right to highlight what can only be described as the shameful hypocrisy of the Conservatives on this matter. Rishi Sunak, Alister Jack and Douglas Ross stood on a manifesto that promised a deposit return scheme that included glass. Maurice Golden told us:

"If you are going to do something, do it properly ... include glass."

The Tory Government has U-turned on its promises and is going contrary to the evidence of what will help us to tackle the climate emergency, increase recycling rates and remove that litter—the glass that can be hazardous to children and pets—from our streets, parks and beaches.

It does not stop at the Tories. Labour in Wales shares Scotland's anger about the treatment of devolved Parliaments and shares our ambition to have glass included.

There was a time when Labour in Scotland stood up for the Scottish Parliament's right to make our own choices. I shudder to think what greats such as John Smith and Donald Dewar—those architects of devolution—would think about Scottish Labour's complete and utter silence over the fact that, time and again, the Conservatives want to undermine devolution.

The Conservatives' latest action has shown us that the Tories are bad for business in Scotland, bad for the environment and bad for devolution. It is no wonder that they have not won an election here in the past 50 years. I suspect that, if they keep going, they will not win one in the next 50 years.

Liam Kerr (North East Scotland) (Con): This Government has cut the total forestry and land budget by £3.4 million, it has cut the environmental quality budget by £3.9 million and it has cut Scottish Water's budget by £1.8 million. While the First Minister trots out warm words on protecting Scotland's environment, are these cold cuts not his own shameful hypocrisy?

The First Minister: We have an excellent record when it comes to forestry, peatland restoration and taking action to tackle the climate emergency. As I said to the member's leader and branch office manager, Douglas Ross, every time that we bring forward a proposal or measure to tackle the climate emergency, it is opposed by the Conservatives—time and time again. If we waited for the Conservatives and went at their glacial pace, there would not be a planet for future generations to enjoy.

We will continue not only to talk the talk but to walk the walk and put our money where our mouth is. I know that Liam Kerr does not have much influence, but it would be great if he could use any influence that he has with his colleagues in London to make sure that they do the right thing by Scotland and by the climate emergency and that they—for goodness' sake—finally give us at least a penny of investment for the Acorn project and the Scottish cluster, to help us to tackle the climate emergency.

Community Pharmacy Scotland

4. Christine Grahame (Midlothian South, Tweeddale and Lauderdale) (SNP): To ask the First Minister what the Scottish Government's response is to reports that the Community Pharmacy Scotland board has described the financial settlement that it has been offered as "derisory". (S6F-02200)

The First Minister (Humza Yousaf): Community pharmacies are a key point of access to national health service healthcare. They provide the right care in the right place at the right time.

Discussions are on-going with Community Pharmacy Scotland on the financial settlement for 2023-24. We will build on the increased funding that we have provided for community pharmacy services year on year for the past five years. That has delivered more than £25 million in additional remuneration funding. We have also recently added an additional £20 million to the value of the drug tariff this financial year to address the increase in the costs of medicine. We look forward to continued engagement with Community Pharmacy Scotland.

Christine Grahame: I hope that discussions conclude shortly, recognising the key role that community pharmacies play in sustaining the health and wellbeing of our constituents.

On his line about delivering the right care in the right place at the right time, does the First Minister agree that, with their expanding professional services, pharmacies such as the high street pharmacy in Lauder and the larger chain pharmacy of Boots in Galashiels—examples from my constituency—also ease pressure on general practitioners and even accident and emergency services, emphasising, yet again, their key role in our health service?

The First Minister: Christine Grahame is absolutely right that pharmacies provide an exceptional service, whether through the minor ailment service, the pharmacy first service or the range of other services that they provide and whether they are small independent pharmacies or part of larger chains.

To give her some level of reassurance, I say to Christine Grahame that we are committed to continuing to fund those vital services. For example, since its introduction, the pharmacy first service has become established as a key part of the remobilisation of the NHS. I am grateful to all pharmacy contractors and staff for continuing to support that vital element of primary care in Scotland. It is funded separately, but current annual funding of £30.8 million is allocated for pharmacy first, including £10 million of new funding that was invested between 2020-2021 and 2022-23.

I agree with Christine Grahame about the excellent services that are provided by pharmacies right across the country. As I mentioned in response to her first question, discussions and negotiations with Community Pharmacy Scotland are on-going and we are hopeful that we will get to an agreed position.

Carol Mochan (South Scotland) (Lab): When Humza Yousaf was health secretary, in a written response to a question from me, he said that the previous financial package ensured the

“continuous expansion in the quality and number of services that can be offered by community pharmacy contractors to local communities.”—[*Written Answers*, 7 December 2021; S6W-04404.]

Following a new offer made by the Government that he now leads, we are being warned that opening hours may reduce and services may be cut back. How has it gone so badly wrong on his watch, yet again? Will he personally meet community pharmacy representatives to resolve this important issue?

The First Minister: The pharmacy sector is not immune to the high energy and inflation costs that are affecting everyone in every business up and down the country. We have called on the United Kingdom Government to do more; it has not done enough to address many of the issues that are of its making.

It is within our gift to ensure that we give appropriate resource funding to pharmacy services here in Scotland. We have increased funding for community pharmacy services year on year for the past five years. In Scotland, the Government spends £52 per person per year on pharmaceutical services. Spending on that is not as high where Carol Mochan’s party is in charge. If we look at England, where the Conservatives are in charge, the figure is £46 per person.

We will continue to invest and to ensure that we adequately fund pharmacies up and down the country. I am very grateful for the services provided by pharmacies and pharmacy staff the length and breadth of Scotland.

I am confident and hopeful that we will get to an agreed position, and sooner rather than later.

Sandesh Gulhane (Glasgow) (Con): This development, described by the First Minister as “recent”, took place just yesterday. It was community pharmacists who said that the offer was “derisory” when they rejected it, which was before that money was put in. However, I welcome the money, which follows pressure from Community Pharmacy Scotland and myself, because it eases—[*Interruption.*]

I am glad that the SNP members are laughing—it shows that they clearly do not care about community pharmacists.

The money eases some of the cost pressures on the community pharmacy networks while the negotiations continue.

Will the Scottish Government underwrite the risk that the network is carrying on behalf of the national health service, so that it can continue to

supply essential medicines and support the people of Scotland with the full service offer?

The First Minister: I remind the chamber that Dr Sandesh Gulhane has nothing to do with the negotiations with Community Pharmacy Scotland. The investment comes from the Scottish Government; the health secretary and the minister for public health are involved in those discussions with Community Pharmacy Scotland.

I will make sure that we continue to fund pharmacies and pharmacists up and down the country to the level that they require. They are facing challenges because of the pressures of inflation, high energy costs and energy bills. There are also some global factors that are affecting medicine prices. That is why the Scottish Government gave an additional £20 million to the value of the drug tariff in the current financial year.

We will continue our engagement with Community Pharmacy Scotland. I am very grateful for the excellent services that it provides the length and breadth of Scotland.

Early Years Sector (Mental Health)

5. Meghan Gallacher (Central Scotland) (Con): To ask the First Minister what the Scottish Government’s position is regarding recent reports that suggest there is a mental health crisis emerging in the early years sector. (S6F-02199)

The First Minister (Humza Yousaf): The unprecedented pressures of the past few years, including Brexit, the Covid pandemic and the cost crisis are taking a toll on many people’s mental health, including on the mental health of early years staff. I am particularly grateful to everyone in the workforce for continuing to operate as key workers throughout this difficult time. That is why, since October 2020, the Scottish Government has invested more than £2 million in the wellbeing of the education workforce.

We have also worked with Early Years Scotland to develop the team ELC wellbeing hub, specifically to support professionals. That builds on what local authorities, as the direct employers, are doing to support the wellbeing of their employees.

Meghan Gallacher: Since being elected to the Parliament, I have raised concerns about an emerging childcare crisis. The SNP Government has done nothing to fix the problems in our childcare sector. Now, more than 8,000 nursery and childcare staff have taken sick leave because of stress or mental health concerns. Those absences are indicative of a childcare crisis, with more than nine in 10 councils being unable to fully fund free childcare.

Nurseries are closing their doors, and parents are without childcare for their children. Audit Scotland has even said that the sector is fragile.

Early years practitioners, who are children's first educators, are being let down by the Government. Will the First Minister meet me and nursery providers to discuss the 1,140 hour policy, given that he expressed interest in expanding it as part of his leadership bid?

The First Minister: We have the most generous offer of childcare anywhere in the UK, and I am really proud of the 1,140 hours of provision that we have achieved. I recognise the challenges that the sector faces, which is why Natalie Don, who is the Minister for Children, Young People and Keeping the Promise met the private, voluntary and independent sector just this week, I believe—and certainly recently.

I will ensure that the Government continues to engage, whether that is with Meghan Gallacher or directly with the sector. I take mental health very seriously, which is why we have invested more than £2 million in the wellbeing of the education workforce, as I said, and why we are working with local authorities on what more can be done, particularly for early learning and childcare staff.

To help with challenges such as mental health challenges, workload pressures and the cost crisis, which Meghan Gallacher's party created, we are ensuring that staff who work in early learning and childcare are well paid. Before early learning and childcare was expanded, approximately 80 per cent of staff who delivered funded ELC were paid less than the living wage. In contrast, our 2021 health check indicated that 88 per cent of private providers intended to pay their staff the real living wage from August 2021.

We will continue our focus on expanding childcare. We know the benefits that it can have for parents and families and the positive disproportionate impact that it can have on women entering the workforce. We will continue our focus on that and we will continue to engage, whether that is with Meghan Gallacher or—more important—with the PVI sector.

Clare Haughey (Rutherglen) (SNP): Recent research by the Joseph Rowntree Foundation found that a quarter of adults in Scotland have accessed the NHS because of the impact of the cost of living crisis on their mental or physical health. Under existing powers, what progress can be made to protect workers, including those in our childcare sector, from being further impacted by the crisis?

The First Minister: Clare Haughey is absolutely right to raise such issues. We will do everything that we can, within our gift, to use the powers of devolution to their absolute maximum to help

people—particularly those who are most vulnerable and who are in the lowest-income households. That is why I was pleased this week to visit Castlebrae community campus and meet not just young people but parents and families who have been impacted and helped by the Scottish child payment. Families of 303,000 children are now in receipt of that game-changing intervention from the Government. On top of that, many other benefits that are available only in Scotland are being awarded through Social Security Scotland.

We will do everything that we can, within our gift, to help with the cost of living crisis, which is having a mental health impact on many people across the country. The unfortunate problem is that, for all the good that we can do, the actions of the UK Government—with its austerity for more than a decade, its cost of living crisis and its mini-budget that wrecked the economy—mean that we are having to spend not millions but billions of pounds on mitigating the worst effects of Conservative austerity. If Scotland has to continue to do that, that will mean less and less money to spend on education, health, transport and justice. To me, that is simply not acceptable.

Sentencing of Under-25s (Guidelines)

6. **Pauline McNeill (Glasgow) (Lab):** To ask the First Minister whether any objections or concerns were raised by the Scottish ministers during the deliberations about the guidelines for sentencing under-25s, which came into effect in January 2022. (S6F-02201)

The First Minister (Humza Yousaf): In line with requirements that the Parliament agreed to, the content of sentencing guidelines is entirely a matter for the independent, judge-led Scottish Sentencing Council. As part of the consultation that the council undertook on the guideline, the Scottish ministers were sighted on a near-final draft. As the Cabinet Secretary for Justice at the time, I replied and noted that the council had taken “an evidence led, collaborative approach in developing the draft guideline”

that promoted rehabilitation, early intervention and alternatives to custody and was ultimately about working to reduce reoffending.

I am pleased that reoffending levels have fallen over the past decade, which is helping to keep our communities safe. It should be noted that the position in the guideline is that custody is still an option for sentencing young people and it is completely right that that option remains available to the court in any given case. The Cabinet Secretary for Justice and Home Affairs, Angela Constance, recently met Lady Dorrian to discuss

how the council plans to keep the guideline under review.

Pauline McNeill: We know that there have been at least two reported cases in which there has been public concern about the leniency of sentencing: first, in a case in which there was no jail sentence for the rape of a 13-year-old girl, and, secondly, in the case of the horrific rape and murder of Jill Barclay, where there was a reduction in sentence of four years.

Today, the First Minister has confirmed that he sees no role for the Scottish Parliament in such issues and that there is a role only for the Sentencing Council. It seems that, as far as he is concerned, it is nothing to do with this Parliament, even though the introduction of the guidelines was a significant change in sentencing policy.

Is the First Minister aware that this Parliament had a say when it came to the discounting of sentences in relation to early pleas? I do not understand why, given that that was the case, Parliament would not have a say in the issue that we are discussing.

When it comes to horrific crimes that are as serious as rape and murder, does the First Minister believe that there should be reduced sentences for under-25s? Can he at least give us some comfort by saying that he believes that this Parliament should have some oversight of significant changes to sentencing policy in Scotland?

The First Minister: I say to Pauline McNeill, whom I know has a long-standing interest in these matters, that there was a public consultation on the guideline. I do not know whether Pauline McNeill or the Scottish Labour Party responded to that public consultation, but every guideline goes through that quite lengthy process before it is eventually approved by the High Court. The Scottish Government responded to the consultation on the guideline at the time.

I say to Pauline McNeill that the particular guideline that she is talking about was informed by a mountain of evidence—about 122 pages of research by the University of Edinburgh—on the issue of cognitive maturity in the justice system, particularly among young people. I am happy to send her that information, although, of course, she might have seen it already.

It is absolutely right that matters of sentencing are for the independent judiciary. Of course, where the Parliament has an interest, it is fine for a member such as Pauline McNeill to introduce a member's bill, and, if she thinks that the Government should introduce legislation on a matter, I am more than happy to consider that. However, even in cases in which particularly heinous crimes have been committed, it must

always be the case that sentencing is a matter for the independent judiciary and should be free from any political interference whatsoever.

The Presiding Officer: We move to general and constituency supplementary questions. I ask for brief questions and responses.

Ferry Services (South Uist)

Alasdair Allan (Na h-Eileanan an Iar) (SNP): Last night, Caledonian MacBrayne announced that it would yet again be abandoning ferry services from South Uist for virtually all of June, in order to make up for issues elsewhere. In a statement that could only have been written a long way from South Uist, customers were advised that they could instead get to Oban and Mallaig via either Barra or Skye.

What more can the Scottish Government do to challenge CalMac's decision, given that that community has already seen a third of its services cancelled during the past year?

The First Minister (Humza Yousaf): I thank Alasdair Allan for raising what is an incredibly important issue for his constituents—I know that many members will have an interest in this issue, too.

First, I will ensure that the Minister for Transport reflects on the point about communications, because we know that that is an issue that has been raised time and time again by our island communities, who, of course, feel anger and frustration in relation to the latest developments and want there to be better communication when there is, unfortunately, disruption to the ferry services.

I recognise the significant impact that this particular disruption will have on the communities in the Uists. I know that the Minister for Transport has made very clear to CalMac that it must continue to explore every possible avenue to keep the disruption to an absolute minimum. The minister visited North Uist and South Uist last week and, this morning, met the South Uist ferry business impact group—I have not yet had a read-out from that meeting, but I will ensure that I get one shortly after First Minister's question time.

As Alasdair Allan has asked me to do, I will ensure that CalMac explores every possible avenue to minimise this disruption as much as it can.

Vulnerable Individual with Learning Difficulties

Oliver Mundell (Dumfriesshire) (Con): I raise the plight of a vulnerable and deteriorating individual with severe learning difficulties who is in the care of Dumfries and Galloway Council but who has, for complex reasons, ended up trapped

in a residential home in the south of England. For over a year, her sister has been desperately trying to get her back home closer to family and, at every turn, social work has deliberately obstructed that, and seems to be willing the lady to die or become too weak to travel in order to save itself cost and hassle. Despite notice being served by the existing home and a best interest meeting that agreed with the family that she should return to Scotland, progress has been extremely limited. If I provide her details privately, will the First Minister step in and ensure that her human dignity is respected?

The First Minister (Humza Yousaf): Of course, I am happy to look at the details of the case, and the Cabinet Secretary for NHS Recovery, Health and Social Care will also look at them. If there is some way in which we can assist, we will do that.

I am sure that Oliver Mundell understands that it is really important that we do not overstep professional decision making or clinical decision making, which may well be a factor in that particular case. However, I hear what he has to say. He has made a very powerful contribution on behalf of his constituents, and I cannot imagine what the family is going through. I will, of course, look at the details if Oliver Mundell sends them to me shortly after First Minister's question time.

Scottish Child Payment (Uptake)

Paul O'Kane (West Scotland) (Lab): New forecasts from the Scottish Fiscal Commission show a concerning gap between eligibility for, and uptake of, the Scottish child payment. It is projected that more than 60,000 families could miss out. That disparity is most pronounced among children between six and 15. It has been estimated that only 80 per cent of that age cohort will take up the payment, compared with 92 per cent for under-sixes.

The Scottish child payment was unanimously supported across the Parliament, but the payment has the ability to change lives only if people are aware that they are entitled to it and—crucially—are supported to apply for it. If the First Minister is serious about tackling poverty, as he says he is, will he investigate and address that concerning disparity between eligibility for, and uptake of, the Scottish child payment to ensure that it has the fullest impact, which we all support?

The First Minister (Humza Yousaf): I give an assurance that that is a key area of focus for the Government, and the Cabinet Secretary for Social Justice and I have already had a conversation about that. Good work is already being undertaken in relation to marketing and awareness to ensure that we do everything that we possibly can so that every single person who is eligible for that game-changing intervention takes it up.

As I have mentioned already, I was in Castlebrae community high school only this week. There, I talked to schoolchildren and parents who have benefited from that positive intervention. We have made excellent progress on the extension of the Scottish child payment to under-16s. As I have said, statistics show that 303,000 children were in receipt of it by the end of March. I can give Paul O'Kane an absolute assurance that we are working hard to do what we can to continue to raise awareness so that everybody who is eligible can take up the game-changing Scottish child payment.

Women and Girls in STEM

Audrey Nicoll (Aberdeen South and North Kincardine) (SNP): Following First Minister's question time today, I will hold a members' business debate on encouraging women and girls into science, technology, engineering and mathematics. Given the importance of STEM, particularly to the north-east economy, and its role in Scotland's transition to net zero, what action is the Scottish Government taking to motivate women and girls to pursue careers in it?

The First Minister (Humza Yousaf): I thank Audrey Nicoll for the excellent work that she is doing, and I give my apologies that I cannot make it to the event later on.

We know that the more effort that we put into STEM and ensuring that we get more women and girls into STEM subjects, the more beneficial that is not just for them but for the economy in Scotland. We are taking forward a range of interventions, and I am happy to write to Audrey Nicoll with the details of all the interventions that we are taking forward in relation to that particular issue. The more we invest in encouraging girls into STEM subjects, the better it is for the economy as a whole, and everybody will benefit as a result of that. That is an absolute win-win.

Nursery Sector (Staff)

Willie Rennie (North East Fife) (LD): The First Minister knows that many experienced staff are departing the private and voluntary nursery sector because nurseries in it receive lower fees than those in the councils. During the leadership contest, the First Minister promised to close that gap. Is he going to commit to delivering that, as he said, in the next budget, for 2023-24? Is he going to keep the promise?

The First Minister (Humza Yousaf): Willie Rennie is right in saying that I promised to look at the issue and to clearly understand the concerns that have been raised, particularly by the private, voluntary and independent sector. He will have heard in a previous response that the Minister for Children, Young People and Keeping the Promise,

Natalie Don, met the sector recently. The member may also be aware that, despite having the highest rates in the United Kingdom in 2022-23, both the Scottish Government and local government recognised the need to strengthen the process of rate setting. We are working with the Convention of Scottish Local Authorities to take forward an evidenced-based sustainable rates review, and there will be a report on that soon. I am determined to ensure that we are supporting the PVI sector, which is so crucial in helping us to expand our exceptional free childcare offer across the country.

Liam Kerr (North East Scotland) (Con): On a point of order, Presiding Officer. When failing to answer Douglas Ross earlier, the First Minister said that the United Kingdom Government has given:

“not a single penny of funding towards the Scottish cluster or the Acorn project”.

Anyone who was in command of his brief would know that the UK Government has, in fact, given more than £40 million to the Scottish cluster. In the light of John Swinney voluntarily correcting the record following his misleading of the chamber last night, will the Presiding Officer advise the First Minister on how he might correct his latest gaffe?

The Presiding Officer: Members will be aware that the chair is not responsible for the content of members' contributions. We would always expect that the content of responses address specific questions that have been put and, when members become aware of any inaccuracy, that they take the measures that are available to them in order to make any corrections.

12:51

Meeting suspended.

12:53

On resuming—

Women and Girls in STEM

The Deputy Presiding Officer (Annabelle Ewing): I encourage members of the public who are leaving the public gallery to do so quietly, as we are about to restart business.

The next item of business is a members' business debate on motion S6M-08947, in the name of Audrey Nicoll, on increasing the participation of women and girls in science, technology, engineering and maths. The debate will be concluded without any question being put.

Motion debated,

That the Parliament believes that Science, Technology, Engineering and Mathematics (STEM) make an important contribution to driving economic growth and delivering new approaches to the climate emergency; notes the so-called leaky pipeline, whereby women and girls account for only 25% of the STEM sector, despite maths and science subjects being equally popular among girls and boys within school age education; recognises the work underway in schools and further and higher education institutions, including Robert Gordon University, located in the Aberdeen South and North Kincardine constituency, as well as in businesses and energy-related industries, to address the under-representation of women and girls in the STEM sector; welcomes the Scottish Government's STEM strategy and the work of Equate Scotland, which aim to change cultures in organisations and academia; commends Aberdeen City Council and its partners for what it sees as their innovative work to align the school curriculum to future skills demands in offshore energy production and other growth sectors, and notes the view that all stakeholders should continue to work together to increase opportunities for girls and young women in STEM.

12:53

Audrey Nicoll (Aberdeen South and North Kincardine) (SNP): I thank members for supporting the motion on increasing the participation of women and girls in STEM, as well as colleagues who will be speaking in the debate.

I am grateful to the wonderful women whom I was privileged to speak to during my research, and I extend my thanks to the organisations that submitted informative briefings ahead of the debate.

STEM—science, technology, engineering and mathematics—subjects are integral to almost every aspect of modern society, from food production to advancements in medicine, economic forecasting, our growing space sector and arts and culture. STEM is a key driver of economic growth in Scotland.

My personal interest in the subject is deeply linked to the north-east's energy sector and the rapidly growing demand for a strong STEM

workforce to help to facilitate our ambition to become a global energy hub. In his report, “Making the Switch”, Professor Paul de Leeuw of Robert Gordon University reminds us that the north-east hosts a workforce that

“possesses the specialist knowledge, experience and expertise required to deliver and accelerate the energy transition.”

However, women make up only about 25 per cent of the oil and gas industry workforce and approximately 18.5 per cent of the offshore wind sector. Of course, that is seen elsewhere, with women underrepresented in STEM on multiple levels. Although progress has been made in closing the gender gap, the gap still exists. The parity in STEM learning between boys and girls diverges as children move through secondary school, with girls being significantly less likely than boys to learn STEM subjects beyond higher stage—the leaky pipe analogy.

In its briefing, Close the Gap highlights that

“fewer girls take STEM subjects at Higher level such as physics ... computer science ... and engineering science compared to boys.”

Close the Gap also points out that

“73% of female STEM graduates do not pursue a career in this area”

and that only

“9% of STEM professors are women and women account for 11% of directorships in the STEM sectors.”

Gender stereotypes, a lack of role models, a lack of access to STEM programmes and challenges around work-life balance and family responsibilities all play their part.

I spoke to many women working in the STEM sphere, who spoke about how children’s attitudes about gender and work roles become fixed at an early age and heavily influence their future subject choices, as Close the Gap sets out clearly in its briefing, and about the crucial role of inspirational teachers and lecturers, supportive parents and carers in encouraging, but not forcing, STEM learning and careers.

The Teach First report, “Missing Elements: Why ‘Steminism’ Matters in the Classroom and Beyond”, highlights that only half of the United Kingdom population is able to name a female scientist. However, the good news is that we can now buy a Barbie professor, so all is well in the world.

Beyond education, I heard about unwelcoming work environments in which stereotypes about the different roles of men and women were strong. One academic spoke of our increasingly gendered society and how some men are, as she put it, blind to the issues of gender imbalance.

Another academic spoke of the subtle barriers that women in STEM face while at the same time being constantly reminded of her role as a STEM influencer. An engineer told me of the pressure that she felt to try harder to do more to prove herself. The lack of access to flexible working and good-quality part-time jobs was evident, as was, critically, the lack of access to affordable, good-quality childcare. There are common themes in the challenges that are faced by girls and women, but there is also much consensus on how to respond and some great examples of work that is already under way.

Aberdeen City Council, Robert Gordon University, the University of Aberdeen and NESCol—North East Scotland College—have developed the Aberdeen computing collaborative, a computer science curriculum from early learning to the senior phase that is designed to encourage young people to consider a career in teaching computer science.

Shell’s girls in energy partnership is a one-year course delivered with NESCol and Fife College to showcase the energy industry’s career opportunities to girls in the senior phase. Today, the centre for health data science at the University of Aberdeen is holding the annual women in data science conference, which will coincide with the annual worldwide data science conference that is being held at Stanford University and at about 200 other locations worldwide.

I was also pleased to note that Equate Scotland is working in partnership with ConStructEd Scotland to offer a hands-on construction experience for women in graduate or postgraduate engineering. I look forward to hearing other examples of progress during members’ contributions today.

I welcome the Scottish Government’s commitment to the careerwise programme and the women into STEM pipeline project, and I am encouraged that more female students are enrolling in maths and science college courses and that female undergraduate engineering student numbers are increasing.

What needs to change? First, we need to tackle gender stereotypes. Although initiatives such as taster sessions for girls are welcome, they are insufficient to create sustainable change. Earlier intervention in early years settings is required, as is prioritising gender-competent leadership, particularly in wider education settings. We also need to actively recruit more women into roles in which they are underrepresented and to support women to access reskilling opportunities—that is particularly relevant to the energy sector.

Crucially, expanding access to affordable childcare is required. In that regard, the Scottish

Government's expansion of early learning and childcare to all three and four-year-olds and to eligible two-year-olds is hugely significant not only in improving the health and wellbeing of children and parents, but in supporting parents into work, study or training.

I very much look forward to hearing the minister's response to members' contributions today. Again, I thank everyone for their support in bringing forward this debate.

13:01

Evelyn Tweed (Stirling) (SNP): I thank my friend and colleague Audrey Nicoll for securing this important debate.

Although STEM subjects are equally popular with young girls and young boys, there is a "leaky pipe", as Audrey Nicoll mentioned, which leads to the underrepresentation of women down the line. It should go without saying that that is not caused by lack of skill. Stigma is pushing women away from STEM.

There are key barriers, both material and social. Outdated gender roles lead girls to believe that STEM subjects are not for them. The women into STEM project found that a shocking 48 per cent of the pupils who were asked agreed that STEM-related careers are mostly suited to men. Close the Gap highlights in its briefing that girls are still significantly underrepresented in STEM subjects at school. The most recent data shows that girls made up just 17 per cent of computing science students, 27 per cent of physics students and 11 per cent of engineering science students at higher level.

That underrepresentation continues into higher education. There has been only a slight increase in the number of women who enter STEM degree programmes. For example, the percentage of women among students entering computing degree programmes increased from 19.9 per cent in 2019-2020 to 22.7 per cent in 2021-2022. Among students entering the physical sciences, the percentage of women moved from 41.6 per cent to 43.8 per cent in that time.

I think that we can all agree that we have to do a lot better. Early interventions to tackle stigma and support women and girls in STEM are vital, and I am pleased to see that being taken seriously in my constituency. From McLaren high school's consultation with female pupils on the redesign of its computing course delivery to Bannockburn high school's partnerships with external stakeholders, there are ways of removing barriers and building passion in girls for STEM. Schools across Stirling are embracing a collaborative approach and building professional networks to share resources and curriculum. Female pupils from McLaren high

school have reached more than 200 pupils across 11 primary schools with STEM and robotics workshops. That is helping to grow enthusiasm for STEM and providing very strong female role models.

The collaborative approach extends into higher and tertiary education. Forth Valley College is working in partnership with West College Scotland, Young Enterprise Scotland, Skills Development Scotland and Equate Scotland on an ambitious project. By involving older pupils in projects to market STEM to their peers, the women into STEM project shows the influence of peer mentors in encouraging participation. The project also partners with employers to build sustainable pathways for girls to progress into STEM careers, which is absolutely amazing.

Innovative thinking is progress, but those ideas need to be backed by funding. A teacher I spoke to said that they had been prevented from running specific girls clubs as it would split already limited budgets. They also highlighted challenges in providing after-school clubs to those who live in rural areas. When we do not make space for women and girls of all backgrounds in STEM, we lose out on essential talent and vital perspectives. It was very good to hear the First Minister, earlier, speaking positively about encouraging women and girls into STEM subjects, but progress is extremely slow. We must take opportunities such as this debate to champion the excellent work that is already being done, but we need to push for more.

13:05

Pam Gosal (West Scotland) (Con): I am delighted to speak in today's debate on behalf of the Scottish Conservatives, and I thank Audrey Nicoll for bringing to the chamber this important motion on increasing the participation of women and girls in STEM.

The last time I spoke in a debate of this nature, I gave examples of the extremely talented females whom I had met at universities and research centres. It was clear then to everyone in the chamber just how vital it is that we support women to pursue STEM subjects, because they bring diverse perspectives that can lead to more innovative and effective solutions to real-world problems.

As Evelyn Tweed highlighted, we already know that girls are significantly underrepresented in higher STEM subjects, and we already know that the vast majority of female STEM graduates are not employed in STEM fields. Today, I would like to discuss how we can act to remove the barriers for our future female STEM leaders.

After speaking with the college sector, it is clear to me that the earlier we engage with school

pupils, the smaller will be the preconceived gender gaps. Colleges are doing some great work on engaging with schools. For example, West Lothian College does woodworking activities with local primary schools, and New College Lanarkshire runs “Toddle into STEM” events with its early years nurseries. Another fantastic example is from North East Scotland College, which runs an energy programme in partnership with Shell to encourage women into STEM careers.

Close the Gap believes that one possible solution is to ensure that women have access to training and development opportunities, as well as access to high-quality accessible childcare. I am concerned that the lack of action by the Scottish National Party Government will have a long-term detrimental impact. On the first point, I am concerned about the SNP’s decision to roll back the previously announced £46 million in funding for Scotland’s colleges and universities. That funding was vital to Scotland’s innovation landscape; I hope that its removal will not have an impact on closing the gender gap in STEM.

As for childcare, Audit Scotland’s report about the fragility of the early learning and childcare sector is extremely concerning. Childcare providers are absolutely vital to ensuring that parents can return to the workforce. That is key for females in STEM, where there is a lack of flexible working and sometimes a culture of presenteeism.

I am delighted to have contributed on today’s motion about increasing participation of women and girls in science, technology, engineering and maths. The debate has made it clear that we must increase girls’ engagement in STEM-related activities from a young age in order to tackle preconceived stereotypes. Secondly, we must empower young females to pursue careers in STEM by supporting removal of barriers in relation to childcare and more. Last but not least, we must have investment; without it we risk undermining the STEM sector and our success in closing the gender gap within it.

13:09

Pam Duncan-Glancy (Glasgow) (Lab): I thank Audrey Nicoll for bringing the debate to the chamber. Science, technology, engineering and maths are key to boosting future economic growth, driving innovation and finding solutions to some of the challenges of tomorrow and today, including our path to net zero, sustainability, renewable energy, artificial intelligence and the digital world. We cannot, should not and must not leave anyone behind in our mission to achieve those things.

That women and girls are still underrepresented in STEM is not just unacceptable, it is holding us back. According to the National Science

Foundation, only 28 per cent of STEM workers are women; today’s motion estimates the figure to be even higher, and even fewer women are represented in leadership positions in STEM fields. Many reasons exist for that situation; crucially, they can all be traced back to stereotypes that form quickly, as we have heard, and are engrained from the very early stages of socialisation and education. In order to fix that problem, we need to start in the early years and relentlessly focus on it throughout the life course.

In a 2019 survey by Girlguiding, more than half of girls aged seven to 10 said that gender stereotypes changed their behaviour and affected how much they participated in class. Nearly three quarters of girls said that they saw or heard gender stereotypes in school. Those views form and reinforce ideas of what it means to be a girl or a woman, what jobs are suitable for men and women, what educational interests women and girls should have, and what roles they can play in society. Those gender stereotypes have an impact on the decisions that young women and girls then make about their subject and career choices as they move through school and on to further and higher education and the workplace.

One need only look at data from the Scottish Qualifications Authority from 2021 to see the issue. The data shows that, for highers, women are far more likely to study art and design, French, fashion, food technology and childcare, whereas men are more likely to study computing science, physics, engineering and graphic communications, which leads to a trend in higher education of underrepresentation of young women in STEM degrees that follows them to the workplace. Despite the fact that young women are more likely to have higher levels of educational attainment, they have poorer labour market outcomes—we see a concentration of women in low-paid jobs, and gender-based inequalities persist.

I have highlighted many times in the chamber the importance of seeing “people like you” in a room. The reality is that it is hard for a generation of women and girls to imagine themselves in STEM subjects, because the number of women and girls there is so low.

I say to all women and girls who are listening today that STEM is for you. It is a disservice to you that you have been allowed to think otherwise and it is a missed opportunity for a sector that too often loses out on the unique perspectives and talents that you bring.

We need to change that situation and how we think about STEM to see it as a field that is open to everyone. As I have set out previously and as we have heard in today’s contributions, there is much that we need to do to encourage women and girls to pursue careers in STEM and it is our

duty to do so. By working together, we can create a more inclusive and equitable world where everyone has the opportunity to reach their full potential—crucially, a world where women do not have to break the glass ceiling, because they have constructed a world without one.

13:12

Michelle Thomson (Falkirk East) (SNP): I thank my friend and colleague Audrey Nicoll for bringing this important debate to the chamber and for speaking so eloquently on the matter.

I was an early adopter of technology. Having done a degree in music in the early 1980s, it quickly became apparent to me that technology had pervaded even the world of crotchets and quavers. I found myself composing music for a repertory company using early versions of synthesisers and samplers, which ultimately led me to a postgraduate diploma in information technology. However, IT held no interest for me at school; the computer room was full of boys speaking an incomprehensible language. At that point, I could not discern the purpose of and potential in IT. Seeing its application in music, however, changed my perception, so I ended up spending time as a computer programmer, systems analyst and project manager.

Ironically, the skills that were required in many STEM subjects were similar to those that I needed for music—problem solving, communication, creativity, critical thinking and data analysis. Anybody who has had to interrogate and analyse a complex piece of music, such as pieces by Bach, will understand what I am talking about.

Improving the gender balance of STEM subjects in Scotland has been an on-going task all my life. Looking back to 2015, when I was first elected as an MP, Skills Development Scotland, in conjunction with the Institute of Physics and Education Scotland, introduced a project entitled “Improving gender balance Scotland”. Eight years on, the gender gap across STEM subjects is, regrettably, still evident. In 2021, STEM Women noted that, across the UK, just 19 per cent of people who were enrolled in computer science-related subjects were female. Worse is that research suggests that, globally, just 3 per cent of students who are enrolled in information and communications technology courses are female.

My early years in IT were filled with young and ambitious women like me, but fast forward to today and we find that the sector has one of the lowest ratios of female to male employees of any STEM sector. Over the course of my IT career, I saw many senior roles being dominated by men.

The phenomenon—which has already been mentioned in the debate—of the so-called leaky

pipeline still prevails, which proves that this is a complex systemic issue rather than it being the case that there are just a few drips and leaks, which is a kinder analogy. I am very wary of members’ distilling the issue down to the somewhat trite “SNP bad” argument because, for example, world and UK data demonstrate that 35 per cent of entrants to STEM higher education subjects are women, and data from the UK-wide Universities and Colleges Admissions Service shows that only 25 per cent of them graduate and only 30 per cent of that small number have sustained careers in their related subjects.

As young women start to make choices over future careers, perhaps some—arguably like the younger version of me—relate to the phrase, “If you can’t see it, you can’t be it.” The issues that limit women’s economic participation in society—the issues that we come up against time and again—including caring and childcare responsibilities, gender stereotypes, unconscious bias and lack of flexibility in roles can be compounded in STEM-related careers, in which, for example, short-term breaks have a disproportionate effect due to the speed of technological advancement.

The role of mentoring and network support for women such as that which is provided by Equate Scotland, which is mentioned in the motion, is therefore crucial. I commend its work and the support that is provided by the Scottish Government, but it is vital that more companies engage with such initiatives in order to bring about positive change that is led and supported by women themselves.

As Government wellbeing plans progress, we must focus a truly gendered lens on all policies. Schools, universities, colleges, business, industry and academia must all play their part, too.

13:17

Maggie Chapman (North East Scotland) (Green): I thank Audrey Nicoll for securing the debate.

We are in a climate emergency, which requires urgent, wide-reaching and radical change to what is still, despite all our warnings and all the evidence, fundamentally a fossil fuel economy. If that change is to happen at the necessary scale and pace, it needs the work, skills, creativity and dedication of all members of our society. We simply cannot afford to maintain barriers—visible or invisible, conscious or unconscious—of ableism, racism or, as we are focusing on this afternoon, gendered exclusion.

I am proud that the work of dismantling those barriers and of supporting and enabling women and girls to play a full and active role in climate

science and application is well under way in the north-east. Audrey Nicoll rightly celebrates work that is happening in Aberdeen. I commend the Dundee and Angus regional STEM partnership, which includes Dundee and Angus College, Abertay University, the University of Dundee, Education Scotland, Dundee City and Angus Councils and partners in industry.

In September 2022, the partnership hosted a STEM expo at the Michelin Scotland Innovation Parc in Dundee with the theme of sustainable energy. It invited 750 stage 2 pupils from all 16 public secondary schools across Dundee and Angus, together with other schools in the region. The partnership also—this is important—secured funding to pay for schools’ travel to the event. Over two days, it hosted 438 pupils and 35 teachers, with 50:50 representation among school students of those identifying as female and as male. Building and sustaining relationships between schools, universities and other institutions is vital to the task of encouraging and supporting girls and young women to study STEM subjects and embark on STEM careers.

At the University of Dundee, Professor Sue Dawson recently hosted 60 secondary school students from Tayside to showcase the key discipline of environmental science in practice. They benefited not only from Professor Dawson’s expertise and enthusiasm but from her example as a woman in a senior role, because, as Michelle Thomson said, we know that it is hard, if not impossible, to be what we cannot see. Role models—women in science who display not only professional success but integrity, generosity, wisdom and humanity—are essential. We are fortunate to have many such exemplars in North East Scotland. I refer to women such as Dr Rebecca Wade of Abertay University in Dundee, who won national STEM ambassador of the year for 2021 and 2022.

The climate crisis is closely entwined with the biodiversity and food crises. The North East Scotland region has visible and inspirational female leadership in tackling those urgent challenges, with two out of the three professors at the University of Aberdeen’s Rowett institute being women. Aberdeen has also hosted specific conferences for women and girls, allowing potential and active women scientists to share their experience and expertise. Those examples of leadership are complemented by initiatives established by women students, including the women in STEM group at the University of Dundee, which focuses on sharing information and opportunities, offering support and building an empowering environment.

Of course, the range of disciplines in STEM extends far beyond traditional science and

engineering. Women are slowly becoming increasingly important and visible in the IT and computing sectors. The growing prevalence of interdisciplinary projects reminds us that there is no necessary bright line between STEM and non-STEM subjects and that there are many alternative routes to scientific work beyond the traditional pathways.

We all—politicians, academics and business people—need to look beyond formal processes and received wisdom to identify and address less visible factors that lead to the underrepresentation of women and girls. We know that the patriarchy can be insidious as well as egregious. If we are to be truly effective in fulfilling individual potential and facilitating responses to critical global and local issues, we cannot simply slot women and girls into existing structures. Instead, we need to find ways to recreate networks, processes and institutions so that they work better for everyone of all genders. That is work for all of us here and beyond the Parliament. It is vital work that cannot be postponed.

13:22

Clare Adamson (Motherwell and Wishaw) (SNP): I congratulate Audrey Nicoll on securing this debate on increasing the participation of women and girls in science, technology, engineering and maths.

It will be no surprise to members that the topic is close to my heart. However, the irony is not lost on me that I stand here as one of those in the “leaky pipeline” that is highlighted in the motion, has been referenced by many speakers in the debate and is referenced in the 2012 Royal Society of Edinburgh report “Tapping all our Talents—Women in science, technology, engineering and mathematics: a strategy for Scotland”.

The report was initiated by the then chief scientific adviser in the Scottish Government, Professor Dame Anne Glover. In the preface to the 2018 progress review of the report, Professor Lesley Yellowlees asks the following questions:

“Has the infamous ‘leaky pipeline’”

and

“the lack of women making it to leadership positions in academia ... been fixed? Are more than 27% of female graduates entering a STEM-related job on graduation? Are women in STEM in a better position, a worse position or in just the same position as previously?”

We have to be vigilant about those questions. As Michelle Thomson indicated, women’s participation in IT has fallen behind over the years. What more needs to be done to enable women to play their full part in shaping our future, helping to solve today’s key challenges, as Pam Duncan-Glancy mentioned, and using STEM-based skills

to build a better, more economically vibrant and more ecologically sound Scotland?

Two of Scotland's leading outstanding women were involved in that RSE report. Given the importance of STEM with the fourth industrial revolution being upon us, it would be more than disappointing if progress was not being made.

I declare an interest in that I served on the board of SSERC for more than 10 years, latterly as vice chair, until May this year. SSERC has been addressing these gendered issues over several years, and I will briefly highlight some of its initiatives, including renaming its buildings the Ada Lovelace and Jocelyn Bell Burnell buildings. We need even simple measures such as that to redress the historical and contemporary prevalence of women's contribution to STEM being overlooked.

The Scottish schools education research centre offers a broad portfolio of services, principally in support of the STEM areas of the curriculum. From early years practitioners to primary and secondary teachers, school and college technicians and childminders, its STEM ambassadors programme offers volunteering opportunities for those who are working or studying at college or university to engage with young people in STEM activities.

We received a briefing from the Construction Industry Training Board for this debate, and I thank it for that. STEM ambassador Anne Okafor highlights that only 12.5 per cent of the construction workforce is women. That is a missed opportunity, because construction is 6 per cent of our gross domestic product, and that costs our economy. Anne encourages more women through her visibility—by being a visible and accessible role model that girls can relate to. That is something that I strive for through the volunteer roles that I have undertaken. Anne engages with her Brownie troop on STEM activities.

Through the SSERC young STEM leader programme, young people have the chance to inspire, lead and mentor their peers through the creation and delivery of STEM activities and events in their schools, communities or youth groups.

The STEM ambassador and young STEM leader programmes are compatible with the Government's ambition in this area. Its STEM strategy states:

"The long-term goal of promoting efforts to tackle gender imbalances and other inequalities that exist across STEM education and training should continue at pace. Limiting access due to factors such as gender, race, disability, deprivation and geographical location are inherently unfair and continue to undermine our ability to deliver inclusive economic growth for Scotland. The full benefits of STEM

education and training will not be realised until this goal is achieved."

My message for today is this: women, become STEM ambassadors; girls, become young STEM leaders.

13:27

Stephen Kerr (Central Scotland) (Con): I congratulate Audrey Nicoll on bringing this debate to the chamber—of course she was quite right—and I want to frighten Michelle Thomson by telling her that I agreed with every word in her speech, too.

If we do not maximise the talent and productivity of every single Scot, Scotland, Scottish business, our economy and society will suffer. It is because I passionately believe in equality of opportunity for everyone that I am a Scottish Conservative. To me, that is what Scottish Conservatism is all about—opportunity, choice and supporting every citizen to realise their full potential and live the best life that they aspire to live.

Therefore, this debate is not about the principle of increasing the participation of women and girls in STEM but about how to do that. What can we do, as parliamentarians, to encourage more women and girls across our nation to feel confident that they can unlock their full potential in STEM?

First, we need to introduce STEM to children from early years education through play. We should let children discover the fascination of STEM—all the different aspects of it. Let them develop their problem-solving skills, let them build things, let them get dressed up and let us encourage them to let their imagination and curiosity run riot—girls and boys alike with no demarcation and no barriers, from the very beginning of their educational experience. Let us bring STEM to the table in nurseries and in primary and secondary schools. Let us give our children a vision of all the different kinds of STEM-based jobs that there are in every walk of life.

We have to make a special effort to remove the barriers that seem to have been placed in the way of girls' realising their dreams through STEM. We should have what I would describe as inspirational dissatisfaction about the current level of guidance that we give our young people. If we had our way, the Scottish Conservatives would seriously invest in giving our young people the best possible guidance and mentoring. We live in a digital world. Put the digital technology in their hands; teach them to boss the technology rather than to be bossed by it. Let us bring the different stages of a child's educational journey together.

I learned a new word this week, courtesy of Sir Peter Mathieson, the principal of the University of

Edinburgh: interdigitisation. I had not come across that word before. It is a word that describes what happens when we bring our fingers together. He used it in the context of bringing all the different parts of an educational journey together. We need to bring together employers, colleges and universities that are involved with our children much earlier in their educational journey. Guidance, for example, should not be left to S3, S4 or S4. At that stage, it is too late to begin to help our young people, especially our young women, to discover where their passions, interests and aptitudes lie, especially in relation to STEM.

We cannot afford our young people, especially girls and young women, thinking that career opportunities in STEM, artificial intelligence and the space sector, where we Scots excel, are for other people. We cannot afford our young people beginning to think that they cannot follow their dreams because they do not have the same opportunities as everyone else. We must change the narrative about what is possible for all our young people, men and women alike.

We must tackle the idea that going to university is the only route to success. If we get interdigitisation right, our young people should have more exposure to different businesses and other sectors and to colleges and universities, and they will begin to see the vast array of opportunities that lie ahead of them and that there is a choice of pathways, all of which have equal esteem, whether it be an apprenticeship, professional technical training qualifications or studying for a qualification at college or university.

The narrative must change, because there is a commonly held disparity of esteem and that will not change unless the Scottish Government and all of us who support the Scottish Government tackle that head-on. I have to say to the minister that the Government's track record on apprenticeships and funding colleges and universities leaves much to be desired. Ministers must start to listen. They must start to shape policy around the outcomes that we want to see, which means making tough choices and setting priorities. We cannot deprioritise education. Scotland needs its young people to flourish like never before—the world needs our young people to flourish like never before—because we are facing big strategic challenges. It is increasingly to the STEM subject areas and STEM-based sectors that we look for solutions.

The Deputy Presiding Officer: Mr Kerr, could you please conclude?

Stephen Kerr: I am doing so. The Government needs to match its actions to its rhetoric. I hope that, in his response, the minister will bring new thinking to the role that he is now filling, because we need it. If he does, and if he makes the right

choices for Scotland and our young people, we, on these benches, will back him. We need the full potential of our young people, women and girls, men and boys, to be unleashed, especially in the areas of science, technology, engineering and mathematics.

The Deputy Presiding Officer: Thank you, Mr Kerr. We have reached the point at which I am required to accept a motion without notice under rule 8.14.3 to extend the debate by up to 30 minutes. I invite Audrey Nicoll to move the motion.

Motion moved,

That, under Rule 8.14.3, the debate be extended by up to 30 minutes.—[*Audrey Nicoll*]

Motion agreed to.

13:33

Jackie Dunbar (Aberdeen Donside) (SNP): I begin by thanking my friend and colleague Audrey Nicoll for securing this members' debate today. I was going to say that, although I do not agree with most of what Stephen Kerr says, it will become clear in my speech that I agree with the positive parts of his contribution.

As the motion states, women in STEM are making important contributions to economic growth and tackling the climate emergency. That statement applies everywhere in the world, but in Aberdeen we need to take particular heed of it. Our city has the ambition of becoming the net zero capital of the world. Our journey to being able to call ourselves that will not just involve innovation and new approaches, but a just transition away from the oil and gas industry that has underpinned our local economy for decades. Women in STEM will have an important role in shaping Aberdeen's future, so we need to support and encourage girls and young women into the sector.

When I was discussing this last week, I asked how we encourage girls and women into the sector.

The reply that I received was quick, simple and not something that I had considered. It was "Stop stereotyping them. Don't presume they want to play with dolls. Let them play with their Lego, their K'nex, their Meccano or whatever it is that their young minds are interested in."

It gave me pause for thought as I remembered that, at the age of just two, my quine got really upset when she went to a Christmas party at her nursery and Sunty gave her a doll. She was really excited to be allowed to open a present from Sunty early, but she thrust that doll at me when I asked her what she got and said in a really upset tone, "Ah got a dolly! Ah wantit a tractor!" I do not know where that attitude has come from, Presiding Officer. [*Laughter.*] She could not understand why

she had gotten a dolly while the boys got all the cool gifts. As you might guess, that was the last time that my quine got a doll from Sunty. Instead she received the presents that expanded her mind and creativity.

I am proud to say that that quine is now a senior operational technology cyber security engineer, and I would like to think that some of her success is down to us as parents encouraging her to play with what she wanted to play with, no matter whether it was classed as gender specific. It was age appropriate at all times, of course.

As I said, we need to encourage women and girls into the STEM sector, and I think that there is wide recognition of that need, given the many initiatives that are taking place across Aberdeen, a number of which have already been highlighted by Audrey Nicoll, Maggie Chapman and Pam Gosal.

I will take this opportunity to highlight two more initiatives in Aberdeen that I believe are worthy of praise. First, as we talk about giving opportunities to young women, I want to welcome the work of the Aberdeen university women in science and engineering society, which is a group of young women who have taken these matters into their own hands. They are creating a strong, supportive community of students in STEM and are helping to encourage the next and future generations of women into STEM.

Secondly, Techfest is a charity, based in Aberdeen, that aims to promote science, technology, engineering and mathematics activities to young folk and the wider community. They do this work not just across Aberdeen but right across Scotland.

On this year's international day of women and girls in science, they held an event in Kingswells, which is in my Aberdeen Donside constituency, with around 130 pupils from primary schools in Aberdeen and Aberdeenshire, who were able to get hands-on learning experiences and hear about careers in STEM.

As we consider the so-called leaky pipeline, I am encouraged by initiatives such as those and the efforts that are being made across the STEM sector. There is work still to do, but we are on the right track.

Let us show our girls that it is okay to do the jobs that they want to do and not the jobs that they think society wants them to do. The more that we encourage that, the more that we will see the benefit to the STEM sector.

The Deputy Presiding Officer: Thank you, Ms Dunbar. I call the minister Graeme Dey to respond to the debate. You have around seven minutes, minister.

13:38

The Minister for Higher and Further Education; and Minister for Veterans (Graeme Dey): We have heard some excellent examples of how we can and must work together to create greater and wider opportunities for women and girls to access STEM in employment, training and education. I am encouraged by what I believe to be broad consensus across the chamber on this issue. I have never heard Stephen Kerr be so thoughtful and constructive here. I thank Audrey Nicoll for securing the opportunity to explore the topic and to see Mr Kerr in a new light.

Stephen Kerr: There is one aspect of this debate that slightly perturbs me, and that is the fact that I think the minister and I are the only male speakers. I honestly believe that that is part of the problem. Women understand what the need is, but perhaps not enough men do, otherwise we would have had more male speakers encouraging women and, indeed, encouraging the breaking down of the barriers that exist for women in this vital sector.

Graeme Dey: Funnily enough, sitting here a few moments ago, I was thinking that very thing—it is quite telling.

This Government, like many others, has been working hard to overcome some of the challenges, but there is some way still to go.

At a strategic level, we should all be proud that Scotland has a world-class research sector where research discoveries drive the improvements and innovations that help us to reach the economic, societal and environmental aims of our national performance framework and sustainable development goals, including those around reaching net zero.

In schools, and particularly in relation to gender, our STEM education and training strategy includes support for specific actions by a dedicated team of education professionals who support teachers to challenge stereotyping. The improving gender balance and equality officers have engaged with more than 1,000 education establishments and have reached nearly 9,500 practitioners.

Of course, gender imbalance needs to be addressed by a wide range of partners, and every sector has a role to play if we are to reach a position where gender is not considered the main factor that determines a young person's future pathway in life.

Clare Adamson: My colleague Evelyn Tweed mentioned some of the challenges that schools have in tackling some of the issues. Will the minister reflect on the work of Toni Scullion, the young teacher who founded dressCode—a specific coding club for girls that has now been

rolled out with industry across Scotland—as an exemplar of how STEM can be brought into our schools? I will certainly share the information about it with Ms Tweed, to see whether the schools in her area can reach their ambition by following that example.

Graeme Dey: It really has been an illuminating debate, because I have now discovered that Clare Adamson has psychic powers as well. I am just coming to that point.

For learners at school, for the past three years, we have provided funding for the young STEM leader award. More than 2,500 young people from across Scotland have already participated in the scheme.

We know that attempts to have a positive influence on career directions for girls should begin from an early age. Children can form opinions about who should do what job from their formative years, and those opinions can be influenced by their parents as well as teachers. Those views often stay with a young person right through to the end of their school career and beyond. Therefore, Audrey Nicoll, Pam Gosal, Pam Duncan-Glancy and Stephen Kerr were right to highlight the need to do work in the early school years.

Skills Development Scotland recognises that need and is taking a cross-sectoral approach in an attempt to address the issue. However, it is important that we attempt to tackle it by means of an holistic approach. The highlighting of female role models is critical, not least because we know that many women who have followed STEM pathways have done so because they are following in the footsteps of family members. As other speakers—Pam Duncan-Glancy, in particular—noted, if you do not see people like you in a sector, you will hardly be drawn to it. We need to take that on board.

Among a raft of statistics—and there is a raft of statistics—on the situation is one that I find intriguing and worthy of further explanation. Between 2019 and 2021 the number of young women taking STEM highers rose from 31,795 to 32,745. That is almost 1,000 more entries. Over the same period, the figure for passes among women increased from 23,650 to a peak of 28,135. Both of those numbers declined in 2022. Entries declined to a number below the 2019 figure and passes to a point only 650 higher than it.

Interestingly, the improvement covered the Covid period, in which continuous assessment, rather than the traditional examination-based approach, was at play. There is a school of thought that, because women are traditionally believed to have less confidence in their abilities in

the STEM sphere, the amended alternative certification approach held an appeal for them. That is worthy of further exploration as we look to tackle that long-standing issue.

On the subject of secondary school settings, I commend the work that is being done at McLaren high school and Bannockburn high school, in Evelyn Tweed's constituency.

In his report on the Scottish technology ecosystem, Professor Mark Logan talks about the chronic imbalance in computing science at school and the fact that gender role stereotyping removes almost half of our best future engineers from the workforce. I could highlight a variety of examples of work to address that. Toni Scullion's work is one. In response to Michelle Thomson's comments on digital, I point out that YMCA Scotland has supported a programme with CodeClan to address the recruitment, retention and progression of women in STEM. *[Graeme Dey has corrected this contribution. See end of report.]*

However, for all the good intentions and great effort, there is still a long way to go. The stats are sobering. Although women comprise 49 per cent of those in employment, only 27 per cent of STEM professional posts are held by women. In the engineering professions, the figure is 11 per cent.

As I said at the outset, some excellent work is going on. I am aware of the contribution of Robert Gordon University, and, as we look for other best practice, our attention is drawn to Aberdeen and the surrounding area.

Beyond the work of RGU and others, the North East Scotland College's girls in energy programme has introduced more than 650 young women to engineering and has provided pathways to college, university and apprenticeships. More than 75 per cent of those women pursued engineering after leaving school. I met some of them when I was visiting the Angus Training Group a little while back, and I was struck by how warmly they spoke about the initiative. I contrasted those conversations with one that I had with a girl from my constituency who had pursued her career path in spite of the educational influences that were around her, including being told by a teacher that engineering is not girls' work and that she might want to consider hair and beauty or childcare instead. Is it any wonder that we struggle to get young women into this line of work?

As we know, apprenticeships are a key way for employers to invest in their workforce and provide the skills that we need for now and the future. While girls achieve as well as boys in apprenticeships, they participate at a much lower rate. In acknowledgement of that, Skills Development Scotland has identified a series of

practical steps that employers can take to offer a more flexible approach.

Limited progress has been made in improving the gender imbalance at college level. However, an illustration of the hill that has yet to be climbed is the fact that, in 2020-21, only 2 per cent of starts on construction and related modern apprenticeships were female.

Pam Duncan-Glancy: As the minister is talking about colleges, it would be remiss of me not to bring this up. Almost 60 per cent of students in colleges are women. Is the minister concerned about the redundancies in colleges across Scotland? What can his Government do to protect women and others from those?

Graeme Dey: And there goes the consensus. I thought that we were talking about the important issue of STEM. The member knows full well that I am concerned about the situation in colleges, because we have covered it previously.

That gender imbalance is not a problem peculiar to Scotland. When I was in the Isle of Wight last week as part of an islands forum gathering, I visited the local college. The set-up was impressive, but, as I wandered around the engineering area, I was struck that, from a cohort of circa 30, only one woman was present. I relate that not to deflect from the issue confronting us in Scotland but by way of illustration of the fact that no one has yet found a means of cracking the problem.

As the motion for the debate rightly notes, we need to aim for a culture in which women and girls can enjoy and take advantage of equality of opportunity in STEM. It will take time and patience to deliver on that ambition, but we need to make faster progress.

Pam Gosal: Will the member take an intervention?

The Deputy Presiding Officer: The minister is about to conclude.

Graeme Dey: I am in my final moments. It is clear that we have support for our ambitions here, in Parliament, and beyond. As part of my ministerial portfolio role, I will work with partners to achieve a common understanding of the actions that will deliver sustainable improvement, and I will implement them. As part of that, I am open to ideas and suggestions from whichever direction they come.

13:48

Meeting suspended.

14:30

On resuming—

Portfolio Question Time

Social Justice

The Deputy Presiding Officer (Liam McArthur): Good afternoon, colleagues. Our next item of business is portfolio question time. I ask any member who wants to ask a supplementary question to press their request-to-speak button during the relevant question. As ever, there is quite a bit of interest in supplementaries, so I ask for succinct questions and responses to match wherever possible.

Disability (Support)

1. **Jeremy Balfour (Lothian) (Con):** To ask the Scottish Government what support it is offering to people recently diagnosed with disabilities. (S6O-02308)

The Cabinet Secretary for Social Justice (Shirley-Anne Somerville): When someone is diagnosed with a long-term condition, which may mean that they are a disabled person, they may need a range of support. The Scottish Government is committed to ensuring that everyone who is living with a long-term condition is able to access the best possible care and support and benefit from healthcare services that are safe and effective and put people at the centre of their care. We also provide support to disabled people through a range of services such as social care provision; social security, including a range of disability benefits; employment support; and wider work to promote equality.

Jeremy Balfour: The Scottish Conservatives are looking at proposals to introduce a loan scheme to help people who have recently been diagnosed as disabled to meet the costs of equipment up front. Will the cabinet secretary agree to meet me to discuss that proposal further?

Shirley-Anne Somerville: I am always happy to meet Jeremy Balfour to discuss that or any other issue. I hope that, when he brings forward proposals, he will include estimates of how much they would cost and suggestions about how we could meet that additional cost.

Third Sector (Support)

2. **Maurice Golden (North East Scotland) (Con):** To ask the Scottish Government what action it is taking to support the third sector. (S6O-02309)

The Cabinet Secretary for Social Justice (Shirley-Anne Somerville): The Scottish Government values the important role of

Scotland's third sector. The latest estimate by the Scottish Council for Voluntary Organisations is that, in 2021, the public sector invested a record £3.3 billion to support the work of the third sector, with £840 million coming from the Scottish Government via a range of programmes.

We fund and work in partnership with infrastructure organisations—such as the SCVO, Volunteer Scotland and the third sector interfaces—that support the third sector and create the right conditions for it to thrive. We are committed to developing a fairer funding approach with the aim of providing stability and reducing bureaucracy.

Maurice Golden: The third sector is in dire need of multiyear funding settlements. I welcome the earlier statement by the cabinet secretary but, in response to those comments, the SCVO chief executive, Anna Fowle, said:

“Despite similar statements made by previous governments, progress to date has fallen far short of what is required”.

Cabinet secretary, will you commit today to moving beyond your aspirational statements on the subject and publishing a timetable that details your Government's plans for how you will implement fair funding, including multiyear funding, for the third sector?

The Deputy Presiding Officer: Questions should be asked through the chair.

Shirley-Anne Somerville: I met the SCVO very recently to discuss this and other issues, and I was very grateful for its time that day. I hope that members will be reassured not only that the fairer funding arrangements were committed to in the First Minister's prospectus but that we have made further commitments recently.

The on-going volatile economic circumstances have presented additional challenges that make it more difficult for us to provide any certainty over investment beyond the next 12 months. Regrettably, we have therefore not been able to move forward with multiyear funding to the extent that we would have wished in this financial year. However, as I said to the SCVO when I met it, I am very happy to continue to work with it to see what we can do on that and, indeed, on the wider aspects of the fairer funding commitment.

Paul O'Kane (West Scotland) (Lab): I asked the previous cabinet secretary a similar question in October and I think that we heard a very similar answer. It feels like we consistently have the same response from the Government.

I am aware that the cabinet secretary has committed to a wider review of charities in Scotland. Will she commit to reviewing multiyear funding as part of that process?

Shirley-Anne Somerville: Yes, the Government is committed to a wider review of charities, but we are already committed to fairer funding. I say to the member that the reason why the answers were similar is that we remain under very volatile economic circumstances that continue to present challenges to the Scottish Government's ability to introduce more multiyear funding than we already have.

However, I recognise the significance of the matter, particularly to the third sector. As I said in my answer to Maurice Golden, we are committed to working with the SCVO and the wider third sector to see what more can be done on multiyear funding but also on the wider aspects of the fairer funding commitment.

Depopulation in Rural and Island Communities

3. **Jamie Halcro Johnston (Highlands and Islands) (Con):** To ask the Scottish Government how it is tackling depopulation in rural and island communities. (S6O-02310)

The Minister for Equalities, Migration and Refugees (Emma Roddick): A key theme in the Scottish Government's population strategy is focused on ensuring that our population is more sustainably distributed, so that our communities, wherever they are, can flourish. The ministerial population task force has committed to publishing in autumn 2023 an action plan to address depopulation, which will include a place-based focus on areas that are experiencing depopulation, with a discrete focus on rural and island communities.

Additionally, in 2022, the Scottish Government published a proposal for a rural visa pilot, to facilitate migration to rural and island communities. Despite widespread stakeholder support for the scheme, we have, to date, received no response from the United Kingdom Government.

Jamie Halcro Johnston: The Scottish Government's targets for the delivery of superfast broadband have been missed. Local healthcare services have been cut, suspended or lost entirely. Often, care packages are undeliverable because of severe recruitment issues. Roads are in an increasingly perilous state and are pothole ridden, while our ferries network lurches from one crisis to another. There is a shortage of homes to rent or buy. Often, that is the reality of rural and island life after 16 years of the Scottish National Party Government. How does the minister think that that impacts on the sustainability of our rural and island communities?

Emma Roddick: We absolutely recognise that factors such as housing, infrastructure and connectivity—the member mentioned that, but it is, of course, reserved—are essential to attracting

people to Scotland's rural and island communities, and to retaining them. That is why we have established a cross-cutting ministerial task force, to ensure that the broadest range of issues are considered and addressed when it comes to our population challenges.

There is no quick fix to the challenges that we are discussing, and we have to work with regional, local and community partners to ensure that, collectively, we deliver a sustainable solution to the challenges that our island populations face. Our action plan for addressing depopulation intends to take such a place-based approach to addressing those challenges.

The Deputy Presiding Officer: There are a number of supplementary questions, and I want to get them all in, but they will have to be brief, as will the responses.

Alasdair Allan (Na h-Eileanan an Iar) (SNP): The organisation Uist Beò recently shared a story about a global alliance manager for Hewlett Packard who was able to relocate to South Uist thanks to remote working. In its policy on addressing depopulation, what assessment has the Scottish Government made of similarly increasing remote working opportunities in the civil service, particularly when it comes to allowing civil servants to live on island communities?

Emma Roddick: I am grateful to Alasdair Allan for that important question. The Scottish Government is completely supportive of flexible, remote and hybrid working options for our workforce. Our national islands plan makes a commitment to demonstrating that jobs and careers can be sustainable and successful on our islands. Our islands policy team, for example, includes those who are from the islands or who live on them and who have specific expertise on islands policy. Furthermore, our carbon-neutral islands project funds community development officers who support individuals to return to their islands.

Rhoda Grant (Highlands and Islands) (Lab): Depopulation is caused by people finding it too difficult to live in rural and island communities. Ferry failures are a current driver of depopulation. The South Uist ferry is being cancelled—again—for almost the whole of June. That follows similar lengthy cancellations in April and May.

The Deputy Presiding Officer: Ask a question, please.

Rhoda Grant: Stòras Uibhist calculated that each day costs the local economy £46,285. The people of South Uist cannot afford to lose £3 million. It is criminal neglect.

The Deputy Presiding Officer: Ask a question, please.

Rhoda Grant: Will businesses be compensated? If not, they will fold, causing further depopulation.

The Deputy Presiding Officer: I will have a question.

Rhoda Grant: Will the minister act?

Emma Roddick: I suspect that most of that question is for my colleague the Minister for Transport, but I completely recognise the spirit in which it was asked. There are so many issues that we have to tackle if we are to tackle depopulation, including transport and infrastructure. The Scottish Government recognises that we have a role to play in that. That is why we are producing an ambitious and delivery-focused plan that will span portfolios to tackle depopulation.

The Deputy Presiding Officer: Finally, and very briefly, I call Beatrice Wishart.

Beatrice Wishart (Shetland Islands) (LD): Comments in the almost 1,000 responses to a survey that I launched last week on the Serco NorthLink Northern Isles ferry service have outlined the thoughts of some that they may have to leave Shetland due to capacity issues and their inability to travel on their preferred date. Will the Scottish Government meet me to discuss the outcome of the survey and the role that transport plays in tackling depopulation?

Emma Roddick: Again, I suspect that I would be giving a commitment for a different minister to meet Beatrice Wishart. I am more than happy to take on board any specific comments that she has about tackling depopulation as we work on the plan.

Child Poverty (Kilmarnock and Irvine Valley)

4. Willie Coffey (Kilmarnock and Irvine Valley) (SNP): To ask the Scottish Government what action it is taking to reduce child poverty in Kilmarnock and Irvine Valley. (S6O-02311)

The Cabinet Secretary for Social Justice (Shirley-Anne Somerville): We are providing a range of support that will benefit families in Kilmarnock and Irvine Valley—and, indeed, across Scotland—including investment in the game-changing Scottish child payment, 1,140 hours of funded childcare, free bus travel for under-22s and the Scottish welfare fund. Our five family payments, including the Scottish child payment, could be worth more than £10,000 by the time that an eligible child turns six, and more than £20,000 by the time that an eligible child is 16 years old. We also continue to support free welfare, debt and income maximisation advice services, with funding of at least £11 million allocated this year.

Willie Coffey: When you come to this place, one of your key hopes is that you will make a

difference to the lives of the people you represent—and what a difference the Scottish child payment is making for families in my constituency. Instead of deliberately driving more families into poverty like the Tories do, the Scottish Government is putting hard cash into the hands of families and helping around 4,000 youngsters in my constituency to escape poverty. Does the cabinet secretary agree that it was crucial to extend the eligibility and value of the payment to reach out to as many families as possible? Will the Government continue to do everything that it can to lift more families and youngsters out of the scourge of poverty within the lifetime of this Parliament?

Shirley-Anne Somerville: I thank Willie Coffey for that question. Indeed, modelling that was published in March 2022, before the most severe impacts of the cost of living crisis, estimated that the Scottish child payment would lift 50,000 children out of poverty and reduce relative child poverty by 5 percentage points in 2023-24.

Statistics published this week show that, as of 31 March this year, 303,000 children are now benefiting from the Scottish child payment, with more than £7.2 million paid to clients living in East Ayrshire since the payment launched in February 2021. It is a game-changing payment, which we are pleased to have been able to provide. What a shame, Presiding Officer, that the United Kingdom Government continues, through its welfare regime, to push children and their families further into poverty at the same time.

The Deputy Presiding Officer: Kaukab Stewart joins us remotely.

LGBT+ Support

5. Kaukab Stewart (Glasgow Kelvin) (SNP): To ask the Scottish Government whether it will provide an update on its work to improve the lives of LGBT+ people in Scotland. (S6O-02312)

The Minister for Equalities, Migration and Refugees (Emma Roddick): We are committed to advancing equality for LGBTI+ people and to promoting, protecting and realising the rights of every LGBTI+ person.

We are funding a range of projects to tackle inequality and we are working closely with organisations to provide service improvements and support, as well as research and engagement with the community to ensure that their voices are heard and their rights are realised.

We are also committed to introducing a bill to end conversion practices relating to both sexual orientation and gender identity, as far as possible within devolved competence, and to developing a non-binary equality action plan.

Kaukab Stewart: The latest Police Scotland hate crime figures show a 67 per cent increase in hate crimes against people for their sexual orientation and a 350 per cent increase in crimes against people for their transgender identity since 2014-15. The culture war that is being waged against lesbian, gay, bisexual and transgender people is clearly not victimless. At the beginning of this Pride month, does the minister agree that anyone who stokes hatred against the LGBT+ community, however subtle they might be in doing so, is every bit to blame?

Will the minister confirm that she will press ahead with the manifesto commitments and implement reforms to gender recognition as well as a full ban on conversion therapy for all LGBT+ people?

Emma Roddick: That was very well put by Kaukab Stewart. The Scottish Government unequivocally condemns any form of hate crime. In March, we published our hate crime strategy, setting out our vision for a Scotland where everyone lives free from hatred and prejudice.

As I said, we are committed to ending conversion practices. We also plan to establish a Scottish conversion practices helpline, in recognition of the impact that this debate might have on those who have experienced conversion practices.

We remain committed to the Gender Recognition Reform (Scotland) Bill. As Kaukab Stewart knows, we have taken the decision to defend the democratic will of this Parliament by challenging the United Kingdom Government's unprecedented use of a section 35 order, which was used despite the UK Government having not raised any concerns or asked for amendments throughout the bill's nine-month passage through this Parliament.

Mark Ruskell (Mid Scotland and Fife) (Green): Inclusive and safe community spaces are vital for LGBT+ people. The Coorie Creative social enterprise in Stirling is leading the way in that regard, particularly through its clothes alteration project for trans and non-binary folk. Will the minister join me in welcoming the work of that incredible project and congratulate Coorie Creative on its upcoming summer residency at the V&A in Dundee, where it will be working with many disadvantaged groups across the city?

Emma Roddick: I am happy to do so, and I am grateful to the member for bringing that to my attention. Inclusive community spaces that allow LGBTI+ people to feel safe and supported are so important, which is why the Scottish Government has, between 2021 and 2024, provided more than £3 million to organisations to promote LGBTI equality in Scotland. That has included support for

community projects such as the LGBTI rainbow mark—a sign that is displayed in social safe spaces to increase positivity and visibility and to reduce isolation. We also support initiatives that ensure that LGBTI+ voices are heard, such as LGBT Youth Scotland's youth work and LGBT Health and Wellbeing's age project, which is a programme of social opportunities and self-advocacy work for older LGBTI+ people.

Social Security Scotland (Client Concerns)

6. Ivan McKee (Glasgow Provan) (SNP): To ask the Scottish Government what processes it has in place to identify and act upon any concerns raised by clients of Social Security Scotland to ensure that the system meets its aims of putting dignity, fairness and respect at the heart of all of its actions. (S6O-02313)

The Cabinet Secretary for Social Justice (Shirley-Anne Somerville): Treating people with dignity, fairness and respect is at the heart of Social Security Scotland's approach. The social security charter sets out what people should expect from our system. Anything that is raised will be dealt with following Social Security Scotland's compliments, complaints and suggestions process, which can be found on the mygov.scot website. If details have been provided, clients will be contacted. Social Security Scotland uses feedback from that process, alongside feedback from a client panel, as well as responses to regular surveys, in performance reporting to identify what needs investigation and action. It uses that to inform continuous improvement and business planning.

Ivan McKee: Constituents have raised concerns about long timescales for dealing with claims—up to 28 weeks in some cases—and about the process for interacting with professionals who provide support and evidence for claims. Concerns have also been raised about the treatment of applicants. That suggests that more work is required to ensure that the system fully meets its aims of ensuring dignity, fairness and respect.

I have written to the cabinet secretary with details of those issues, and I welcome her reassurance that there is a robust process in place to identify and address such issues at their root. I would welcome the opportunity to engage directly with Social Security Scotland on those matters.

Shirley-Anne Somerville: I am very happy to receive case studies—with the client's permission—from Mr McKee and other members in order to ensure that the agency learns from cases as they come in.

The average wait for adult disability payment is about four months. Some cases are taking longer

than that and therefore longer than they should. I reassure the member that Social Security Scotland has undertaken significant work to speed up the decision-making process and that it is seeing a rise in the number of applications on which a decision is reached each week, while still holding firmly to the dignity, fairness and respect agenda.

There are several areas in which the agency is making improvements. I will be happy to provide further detail for Mr McKee when I receive his letter. I am sure that the agency would be happy to provide that detail directly to Mr McKee, too.

Jeremy Balfour (Lothian) (Con): Does the cabinet secretary recognise that the current delays to benefit processing, especially of adult disability payment, are unacceptable? What has been done to ensure that decision times are met? The current standard does not meet the mantra of dignity, fairness and respect.

Shirley-Anne Somerville: I covered a fair amount of that in my original answer, so I will perhaps give some specific examples while emphasising that people who are eligible for the payment will be paid from the date on which they applied.

I will give some examples of work that is going on. Social Security Scotland has introduced an additional measure to ensure that there is a quick phone call back to a client when an application has been made but extra information is needed, in order to avoid delays. The agency is also drawing on the expertise of in-house health and social care practitioners, who are now available to support case discussions earlier. That has had the direct result of allowing staff to reach decisions more quickly.

Those are just two of the many processes that have been put in place to speed up decision making. I agree with the member that it is taking too long. He has my assurance that the matter has my full attention, as I said when we discussed the matter previously.

Ukrainian Refugees (MS Ambition)

7. Bob Doris (Glasgow Maryhill and Springburn) (SNP): To ask the Scottish Government what proportion of those previously accommodated on the MS Ambition are now in settled or permanent accommodation. (S6O-02314)

The Cabinet Secretary for Social Justice (Shirley-Anne Somerville): All guests on the MS Ambition successfully disembarked the ship by the end of March. A great deal of work was undertaken by the Scottish Government, Glasgow City Council and other key partners to support guests into suitable alternative accommodation; I

thank partners for their collegiate working on that. We have not published data specifically on people from the MS Ambition who were matched to accommodation but, since the supersponsor scheme began, about 6,000 individuals have been matched or rematched to accommodation in Scotland, and about half have gone into social or council housing.

Bob Doris: The supersponsor scheme is a significant success, but demand for rapid housing is an understandable consequence of it. Some Ukrainians have stayed in temporary accommodation for long periods. Given that it is right for people to move to more permanent accommodation across the country, will the Scottish Government commit to prioritising easier access to the private rented sector in appropriate locations, to give families the space and certainty that they need?

Shirley-Anne Somerville: Bob Doris is correct that welcome accommodation, including ships, is intended to provide an immediate place of sanctuary. Our priority is to settle people into longer-term accommodation. Displaced Ukrainians can find it difficult to access private rented housing; the review of the supersponsor scheme, which was published in November, covered that. The Minister for Housing and I are looking at a range of options, which could include further support, to enhance existing local interventions and help people to access private rented sector housing.

Key Workers in Rural Areas (Empty Homes)

8. Alasdair Allan (Na h-Eileanan an Iar) (SNP): To ask the Scottish Government whether it will provide an update on the progress of its plans to bring empty homes back into use as affordable homes for key workers in rural areas. (S6O-02315)

The Minister for Housing (Paul McLennan): Good-quality affordable housing is essential to attract people—particularly key workers—to rural communities and retain them. We are making available up to £25 million for affordable homes for key workers, which is one of a range of actions that we are taking to support the delivery of 110,000 affordable homes across Scotland by 2032, with at least 10 per cent of them in remote, rural and island areas. In June, we will meet Scotland's Housing Network to share with local authorities further information on the fund, and we will include details in our remote, rural and islands housing action plan, which will be published shortly.

Alasdair Allan: Job vacancy rates in NHS Western Isles continue to increase. Given that many young local people cannot find an affordable home locally, we risk potential additions to the

workforce moving elsewhere. How can the Government help to fill NHS, social care and other essential job vacancies in island areas?

Paul McLennan: We recognise the challenges in recruiting key workers in rural and island areas. The fund has been put in place to support the broader work that local authorities undertake to meet the housing needs of key workers, including work through the affordable housing supply programme.

We fully expect local authorities to engage with public sector employers, including NHS Scotland, to identify properties that can be purchased for or targeted at key workers directly or through leasing arrangements with employers.

Miles Briggs (Lothian) (Con): After 16 years of the Scottish National Party Government, the number of long-term empty homes in Scotland has more than doubled to more than 27,000. SNP and Green ministers are presiding over a housing crisis and do not seem to have a plan to fix it. I will ask a specific question. When will the Government introduce emergency legislation to put in place compulsory sale orders and ensure that unoccupied properties can be lived in again as homes?

Paul McLennan: As I said, we are looking at the rural housing action plan, which we will publish shortly. We continue to fund the successful Scottish Empty Homes Partnership. As we move into phase 2, we want to develop a more strategic approach to bring more empty homes back into use and embed the approach in the partnership and with its delivery partners. That will help us to deliver our aims of making best use of existing stock, as I said, and of increasing the supply of affordable housing for those who need it.

Willie Rennie (North East Fife) (LD): People including key workers in the east neuk of Fife are desperate for a home that they can afford. What work has the minister done to promote use of the rural housing burden mechanism, together with the Communities Housing Trust? That has succeeded in the Highlands but has not been spread to the rest of the country.

Paul McLennan: Mr Rennie and I have met to discuss that matter on a number of occasions. As I mentioned, the rural housing action plan is not only to do with remote areas, although there are, obviously, remote and rural parts of Fife, too. As I said, we will publish the action plan shortly.

Point of Order

14:55

Craig Hoy (South Scotland) (Con): On a point of order, Deputy Presiding Officer.

I am aware that, under rule 13.1 of the standing orders, it is permissible for members to make personal statements, conditional upon your agreement and, of course, subject to scheduling by the Parliamentary Bureau. So, in the interests of checking that parliamentary procedures are followed correctly, I ask whether you would grant the First Minister a personal statement, if he asked you for one, to allow him to correct the record and to explain why he used misleading language.

Speaking in response to my colleague Douglas Ross on 27 April, the First Minister, when discussing scandalous bonus payments at Ferguson Marine (Port Glasgow) Holdings Limited said:

“We—and I—share that anger at the fact that bonuses have been paid. Those bonuses relate to a decision that was made by Ferguson Marine’s remuneration committee, without consultation with the Government, in November 2022. I asked for those bonuses not to be paid, but the advice that has come back is that they are a contractual obligation. With regard to any future discussion about or consideration of bonuses, I have made it clear that bonuses should not be paid in relation to vessels 801 and 802. The chair of Ferguson Marine will take forward that work. It is my expectation and the Government’s expectation—the chair of Ferguson Marine knows this very well—that there should not be bonuses in the current financial year, 2023-24, in relation to vessels 801 and 802.”—[*Official Report*, 27 April; c 9-10.]

However, at this morning’s meeting of the Public Audit Committee, Andrew Miller, the chairman of Ferguson Marine, confirmed that bonuses would indeed be paid this year. He stated that that is because they are contractual. He said, “They are points of law and they do exist and it is very difficult to say to somebody that we are just pulling that from your contract.”

When I pressed Mr Miller to respond to Humza Yousaf’s comments that bonuses would not be paid this year and that the chair of Ferguson Marine knows that, Mr Miller said, “No, he’s making a statement, but we have to pay due regard to the contractual obligations under employment contracts set up many, many years ago.”

So, despite the assurances of the First Minister in this Parliament that there would be no bonuses, there clearly will be.

Deputy Presiding Officer, I seek your advice about how Parliament can get straight answers to straight questions from a Government that is increasingly seeing the truth as an optional extra

in this Parliament. Can you say whether the First Minister has sought your permission to make a statement so that he can set the record straight on this vitally important issue?

The Deputy Presiding Officer (Annabelle Ewing): I thank Mr Hoy for his point of order. First, I advise that there has, as far as I am aware, been no such request made. Secondly, obviously, the chair is not responsible for the content of contributions that are made by members, including ministers, as I think you are aware. Thirdly, there is, of course, a well-known and well-established corrections mechanism, should the member wish to pursue that route.

Artificial Intelligence

The Deputy Presiding Officer (Annabelle Ewing): The next item of business is a debate on trustworthy, ethical and inclusive artificial intelligence: seizing opportunities for Scotland's people and businesses. I ask members who wish to speak in the debate to press their request-to-speak buttons.

I call Richard Lochhead to open the debate.

14:59

The Minister for Small Business, Innovation and Trade (Richard Lochhead): Today, we are debating a subject that is already having a profound impact on our lives, our society and our economy, and is being hotly debated right now across the world due to its potential future implications for our planet and humanity.

Rapid progress in the development of artificial intelligence and the prospect of its becoming more and more advanced and powerful are leading to some hard questions for the world. Indeed, this debate takes place against the backdrop of international authorities scrambling to respond to the fast evolution of AI with, for instance, European Union and United States law makers meeting this week to discuss a draft code of practice prior to discussing what regulation might be required in the future in order to address the risk.

Although recent days have witnessed big personalities in the tech world, including AI pioneers, warning of existential threats that could arise in the future, including even a threat to humanity itself, others are more optimistic and point to the benefits for the world—for our economies, productivity, healthcare, education and general quality of life. For instance, mundane tasks could be carried out by AI to allow citizens to focus on more fulfilling work or leisure activities.

Liz Smith (Mid Scotland and Fife) (Con): The minister is absolutely correct in what he says. The evidence so far is, shall we say, conflicting. Does not that suggest that the real challenge is that we do not yet know what the full potential of AI is?

Richard Lochhead: Liz Smith has made a fair point, on which I hope we all agree. I will address the matter in my remarks. It is our duty as parliamentarians to try to navigate the risks and opportunities, and to consider the consequences of AI, which probably no one anywhere fully understands, including even those who have built the technology.

AI has been with us a long time. Recently, we have all become familiar with voice recognition and facial recognition software, to give just a

couple of examples, and further major strides are now under way. The public release of so-called generative AI tools such as ChatGPT—which I have not used to write my speech—means that cutting-edge AI is now at the fingertips of everyone who wants to use it, and it is spreading fast. It took three and a half years for Netflix to get 1 million users. For Instagram, it took two and a half months. For ChatGPT, it took five days.

That has triggered a heated worldwide debate on how to maximise the benefits of the technology while managing its risks. In the past year or so, researchers have found that just by making AI models bigger, they become able to generate answers to many questions in a way that resembles human answers.

All of that is not just harmless fun; generative AI tools will have an impact on jobs, for instance. To give one example, they could automate many tasks in the creative industries. That is not to mention the fact that they were trained on billions of images on the internet with little regard being paid to the intellectual property and livelihoods of their human creators.

Martin Whitfield (South Scotland) (Lab): On the question of training AI, what is the minister's view on people who have protected characteristics seeming to be, quite frankly, open to bias in terms of the training algorithms that are used for AI?

Richard Lochhead: Bias, which I will come on to, is one of the here-and-now threats; it is not something for the future. Martin Whitfield has made a good point about why the issue is a topical one that we have to address.

Many professions can be affected. OpenAI claims that GPT-4 can achieve the same as a top 10 per cent law student in bar exams. Generative AI tools will also require rethinking of education assessment methods, because they can write essays on a wide range of topics.

There is also a more sinister aspect of AI. AI tools will make it much easier to spread large amounts of false but convincing information, which could undermine democracy. That will also facilitate cybercrime and, potentially, other types of crime.

AI is powered by data. The tech giants from silicon valley have been fined again and again for failing to respect people's privacy and data rights.

However, it is important not to lose perspective on AI. Most experts do not believe that it will be able to supersede human intelligence without several new breakthroughs, and no one knows when they could happen. Currently, talk of an impending singularity, which means machines thinking for themselves without needing humans, still involves quite a lot of fiction.

Essentially, for now at least, AI is a very powerful tool. It is an important but disruptive tool that many people compare with the invention of the steam engine, for instance. It is up to us, as a society and as a country, whether it is used for good or bad.

Daniel Johnson (Edinburgh Southern) (Lab):

In a sense, AI is just the latest technology that seeks to replace human activity. Some of its features, such as opaque systems that make decisions on our behalf, are not necessarily new. We must therefore look at the issue from first principles, and we must ensure transparency, accountability and visibility of the things that AI does. If we start from that principle, maybe that suggests a way forward. Does the minister agree with that insight?

Richard Lochhead: I do agree with that, and I hope that Daniel Johnson will note the motion. Those principles are reflected in the motion that we are all signed up to debating.

As Daniel Johnson has alluded, as in all previous technological and industrial revolutions, there are winners and losers. It is the job of democratic Governments to ensure that the benefits are spread as fairly as possible and that the risks are controlled—that needs to happen and it needs to happen now. AI is with us and cannot be uninvented. Well-publicised calls for Governments to pay attention to the hypothetical long-term risks of AI should not, as I said a few moments ago, distract us from its real risks, including discrimination because of bias—which Martin Whitfield mentioned—the negative impact on certain jobs if those professions do not evolve, and election manipulation. It is clear that intervention is needed. Even the tech giants around the world that have made AI what it is today are calling for Governments to intervene. Even if there is a suspicion that they are doing that because they want to pull up the ladder from those who are coming behind them, it is an important point to take into account.

In the midst of the worldwide debate and the uncertainty, disagreements and fears, it is important to understand that Scotland, fortunately, is not suddenly waking up to AI. We start from a solid base from which to make the right choices and reap the benefits of AI while controlling its risks. Our universities' AI research and teaching have been ranked as world class from the start. Data that was released last month by Beauhurst shows that Edinburgh is the top start-up city in the UK outside London, with 12.3 per cent of companies working in AI, digital security and financial technology. We have long recognised the importance of AI. In 2019, we committed to creating an AI strategy for our country and presented and debated our plans in the chamber.

Thereafter, our 2021 strategy laid out a clear path for Scotland to shape development and use of AI in a way that is trustworthy, ethical and inclusive.

To deliver that vision, we set up the Scottish AI Alliance, which is a partnership between the Scottish Government and the Data Lab, which is Scotland's innovation centre for data science and AI. The alliance provides a focus for dialogue and action with industry innovators and educators in order to build the best environment in which to encourage growth and investment. It plays a key role in enabling meaningful two-way dialogue with our citizens to ensure that we build an AI economy and society that protect citizens rights and in which no one is left behind and everyone can benefit from and contribute to AI.

Specifically, the alliance is developing a range of tools to help to inform as well as to educate people, while actively seeking citizens' input. One example is the recently launched Scottish AI register, which offers a simple and effective platform for the public to both understand and have a say in how AI is used to make decisions and deliver public services.

We are also delivering an AI and children's rights programme, in partnership with the Children's Parliament. We are working hard to ensure that our workforce has the skills that are required to power a thriving AI-enabled digital economy. In the latest ScotlandIS Scottish technology industry survey, Scottish companies continue to rank AI in their top three greatest opportunities, while 46 per cent of businesses indicate that they need additional AI skills in order to grow. An important element of our work is the "Digital Economy Skills Action Plan 2023-2028", which was recently published by Skills Development Scotland. We have to continue to address the gaps.

Finlay Carson (Galloway and West Dumfries)

(Con): Does the minister believe that the Scottish Government is supporting public bodies and local authorities in a way that prevents them from being risk averse? Are they supported to lead on and adopt new technologies in order to make sure that we do not experience those negative impacts?

Richard Lochhead: Balancing the risks against the opportunities is at the heart of the debate about AI in Scotland. Going forward, we have to get that right, which will involve all parts of the public sector, including local government.

We have to equip our citizens and workers with the technical skills as well as with the broader commercial, ethical and human skills that are needed to make AI a success. We also have to tackle diversity in the workforce. As an example, we will support the DataKirk's Scottish black talent summit later this year. To help to raise awareness

of AI across our entire nation, later this year, the AI Alliance will launch a free online course called “Living with AI”.

We need to embrace the unprecedented economic opportunities of AI, as we did with previous scientific and industrial revolutions. We are doing that by making strategic investments in Scotland. That includes the more than £24 million that has been invested in the Data Lab—Scotland’s innovation centre for data science and AI—which has an extended network of over 1,500 companies. Tenants at the Data Lab are doing great things. They include the Scottish company Trade in Space, which uses space data and AI to inform and facilitate trade of agricultural commodities. IRT Surveys is a Dundee-based organisation that uses thermal imaging to help housing associations and developers to identify heat loss in homes.

We have also invested £19 million in CENSIS, which is our innovation centre for sensing, imaging and the internet of things, which will all need AI to be fully utilised.

We have invested £1.4 million in the National Robotarium, which is home to world-leading experts in robotics and AI. Other companies that are tenants at the Data Lab include Crover, which is developing a robot that moves through grain to ensure that it is stored at the correct temperature and moisture levels. That helps to reduce wastage due to mould or insect infestations, which currently account for about 30 per cent of commodity grain being lost every year in Scotland. Such important uses of AI by those initiatives in Edinburgh and elsewhere are making a really big difference.

We also have Mark Logan’s review of the technology ecosystem. We have invested £42 million in that, as well as £59 million in CivTech, which is a world-class research, development and procurement scheme that enables the Scottish public sector to work with the most innovative businesses on solving the most difficult problems that we face.

There are exciting healthcare innovations happening across Scotland at the moment, as well. For example, NHS Forth Valley, in collaboration with the Scottish health and industry partnership and the West of Scotland Innovation Hub, is currently running a project to use AI to detect skin cancer in the primary care environment in under 25 minutes by 2025. Therefore, there is phenomenal potential to help our health service and to look after the people of Scotland’s wellbeing by using AI.

I have only a couple of minutes left, so I will say that we have a vision to make Scotland a leader in the development and use of AI in a way that is trustworthy, ethical and inclusive. We need

Government leadership and regulatory action, but most of the levers of regulation are currently controlled by the United Kingdom Government. Data protection, consumer protection, equality and human rights, employment regulations, medical devices regulation, telecommunications, financial services and self-driving cars are all matters that are reserved to the UK Government.

We are a bit concerned that current UK Government plans for hands-off non-statutory regulation of AI will not meet Scotland’s needs. The UK Government might be softening on that, given what has been happening over the past few weeks, but its response seems to be in contrast to the responses of other countries across the world. We do not want to create unnecessary red tape, but we have a duty to create the right supportive environment for businesses to thrive and for citizens to be protected.

In closing, I will mention a couple of things that I am doing. Next week, I will write to the UK Secretary of State for Science, Innovation and Technology to request an intensified dialogue between the UK Government and the devolved Administrations to ensure that UK Government regulation of and support for AI works for Scotland. To kick-start that process, I propose that a four-nations summit on the implications of AI be held as soon as possible.

We also want to ensure that Scotland’s AI strategy evolves to keep up with the accelerating pace of change in AI. Therefore, I am commissioning the Scottish AI Alliance to lead an independent review to set out what Scotland needs to do now to maximise the benefits of AI, while controlling the risks. The Scottish AI Alliance will come back to us with recommendations in due course.

This debate is one without a motion or amendments, so that, as a Parliament, we can debate the future of our country and our planet and the role that AI will play. I am sure that there will be a lot of consensus, and I look forward to hearing members’ contributions, which will help us to navigate the complex journey over the coming months and years to get AI right for our citizens, our economy and the country as a whole.

The Deputy Presiding Officer: Thank you, minister. I call Jamie Halcro Johnston, who has a generous eight minutes.

15:13

Jamie Halcro Johnston (Highlands and Islands) (Con): That is very generous. Thank you very much.

I am pleased to be able to speak on a subject that is increasingly important and increasingly

controversial, as we have just heard. AI will, and already does, provide many opportunities for the future. It is vital that Scotland and the United Kingdom take advantage of those opportunities, including when AI can play a role in specific sectors and when its development can be driven here, in Scotland, by utilising the skills and ingenuity of our people and our businesses.

There are already 50,000 people employed in the UK's AI industry, and it contributed £3.7 billion to the economy last year. The UK is home to twice as many companies that provide AI products and services as any other European country, with hundreds more created every year. Those businesses have secured £18.8 billion in private investment since 2016.

The UK Government recently launched its white paper to guide the use of AI in the UK, which sets out an approach to regulating AI to build public trust in cutting-edge technologies and to make it easier for business to innovate, grow and create jobs. Doing so also involves putting in place the funding to support the sector. UK ministers have committed up to £3.5 billion to the future of tech and science, which will support AI's development. The UK Government has pledged £1 billion in funding to the next generation of supercomputing and AI research, to establish the UK as a science and technology superpower. The new quantum strategy, which is backed by £2.5 billion over the next 10 years, will pave the way to bringing new investment, fast-growing businesses and high-quality jobs to UK. The UK Government also recently announced the AI challenge prize in the spring budget, through which a £1 million prize will be awarded for the best research into AI every year for the next 10 years.

Scotland can and should have the ambition to become a world leader in utilising and developing AI technology. The Scottish Government first published its artificial intelligence strategy in March 2021, setting out its approach to AI in Scotland. It focused on the role of AI in society, arguing that

“the use and adoption of AI should be on our terms if we are to build trust between the people of Scotland and AI”.

I do not disagree with that. Nor do I disagree with the need to follow values-based principles in the development and stewardship of AI. The Scottish Government has adopted UNICEF's policy guidance on AI for children in its strategy and has committed to reviewing those principles regularly to ensure that they continue to best respond to the values and challenges that AI presents. That is important, given the pace of change.

That is why getting our approach to AI right at the beginning is so important, why the collaborative work of the Scottish AI Alliance will

be vital and why the ethical approach of the Scottish Government, and all Governments, must be more than just warm words.

Daniel Johnson: I agree with much of what the member has said, but I wonder whether it is a bit of a risk to view AI as something that is happening in the future. I think that it is already with us. Indeed, many systems are making decisions on our behalf already. It is as much about the here and now as it is about the future. Does the member agree with that point?

Jamie Halcro Johnston: As well as agreeing with the Scottish Government today, I am also finding myself agreeing with Daniel Johnson. This is a day of note for us all, I am sure—let us just hope that none of this is recorded. I do not disagree with the member, and I think that the rest of my speech will reflect that. I recognise that, as the minister rightly said, there are applications happening now that, in short course, we need to be caring about.

A successful AI sector in Scotland will need skilled workers. It is vital that the Scottish Government ensures that the necessary skills and training opportunities are in place; I think that my colleague Pam Gosal will likely speak on that later. As we heard in Audrey Nicoll's members' business debate on women in science, technology, engineering and mathematics earlier today, the Government must also ensure that STEM is an inclusive sector and that careers in AI are open to all.

A successful sector requires Scottish ministers to ensure that both the economic environment and the infrastructure are in place to support it. We still do not have the connectivity that we need; promises about broadband are broken time and time again, and too many areas still have slow and unreliable services. That needs to change if we are to take full advantage of AI opportunities in communities right across Scotland, and not just here in the central belt.

The Scottish Government has said that it wants to build an AI powerhouse, and again I share the ambition, but we have heard that kind of terminology before. We were meant to become a renewables powerhouse, but the jobs did not materialise in the numbers that were promised.

AI can play—and is playing—a role in a number of sectors already, including health. Only in the past few weeks, we have seen it helping a person to walk again. In Scotland, the Industrial Centre for Artificial Intelligence Research and Digital Diagnostics—iCAIRD—is working with partners across the sector, the national health service and academia on the application of AI to the field of digital diagnostics. iCAIRD was supported in 2018 with money from the UK Government, when it

shared a £50 million funding prize from the industrial strategy challenge fund with four other centres.

AI will support our growing space sector in Scotland, which was a subject of discussion in this chamber only a few weeks ago. As the minister mentioned, it is already being used in agriculture by helping to monitor crop health, pest and disease control, and soil health. There are 200 AI-based agricultural start-ups in the US alone; I am sure that colleagues will speak more about specific examples.

It would be wrong to talk about the undoubted opportunities of AI without highlighting some of the challenges that it presents. Only this week, as has been mentioned, more than 350 of the world's leading voices on AI technology warned:

“Mitigating the risk of extinction from AI should be a global priority alongside other societal-scale risks such as pandemics and nuclear war”.

It was a short but fairly chilling statement, and a warning that the science fiction of “The Terminator” movies and of an out-of-control Skynet AI risks becoming science fact.

That may be the doomsday scenario, but some of the negatives of AI are already becoming apparent. AI's progress is rapid and almost uncontrolled. Just as with the growth of social media, it has been released on regulators who are not ready to control it and on a public that is often unable to understand its capabilities or discern when it is being used.

AI is already being used to spread disinformation. Pictures of the Pope wearing a large white puffer jacket—an image created by AI—spread like wildfire on social media, fooling many. That is perhaps an amusing and fairly innocent use, but AI is already being used—or misused—in our schools and universities. It is making it easier and quicker to create increasingly convincing fake videos, with all the potential for exploitative or fraudulent use that that risks. It will be abused, because there will always be people out there seeking to abuse it, whether they are fraudsters, abusers or even hostile regimes.

I am sure that we all want to ensure that Scotland does not limit its ambitions for the utilisation and development of AI. It will likely become an everyday part of all our lives in the next few years, and there are so many areas where it can make a real difference and where it is already having a major impact and making things better. However, the remarkable speed of its development also provides many challenges.

That is why it is so important that we get our approach to AI right now, which means Governments across the world working to ensure that the necessary safeguards are in place.

Unleashing the full potential of AI, with the protections that are needed, will require collaborative working to develop a flourishing industry, drive forward investments into research and development and maximise the benefits for the United Kingdom and for Scotland.

15:21

Daniel Johnson (Edinburgh Southern) (Lab):

This is a really important debate because, ultimately, one of the key functions of this Parliament is to anticipate the big issues, discuss them in advance and set out collective thinking about how we can approach them together as a nation. There is no doubt that artificial intelligence is in that category, but let us also be clear about where and in what context it exists.

Computers used to be people, not things. They used to be people who undertook complex calculations. If you want to understand the parameters of that, the movie “Hidden Figures” that was released a few years ago, detailing the excellent work of largely black, female computers in NASA during the Apollo programme, sets out not only the amazing work that they did but their gradual replacement by machine computers.

On whether AI is a new thing, I gently point out that, on Black Monday in 1987, a quarter of the stock market's value was wiped out, due, at least in part, to automated trading triggered by the falls that had happened on the Friday of the previous week. That wiped out almost a quarter of the market's value, which impacted the value of people's pensions and had a very direct consequence for people's livelihoods and prospects.

These things are not new. Technology has been replacing people's activity ever since we domesticated the horse and invented the wheel. What is more, technology, including computer technology, has been having an impact through the decisions that it makes for decades, if not longer. The difference in what is happening now is the rapidity of the change in the scope and scale of what artificial intelligence does, which is why we need to pay great attention to the letter that Jamie Halcro Johnston referred to, especially given that its signatories include Geoffrey Hinton and Yoshua Bengio, who are two of the leading lights behind generative AI. We also need to be mindful that one of its signatories is an assistant professor here, in Edinburgh—Atoosa Kasirzadeh. I will have mispronounced their name, for which I offer many apologies.

Finlay Carson: Does Daniel Johnson agree that some of the people who have signed up to that letter are some of the people who have caused the problem that we are seeing at the

moment? We have been living for the past two decades with search engines that deliver results that the person who is searching likes, which builds bias into the results. That is one of the issues that we face when we look at AI, right here and now.

Daniel Johnson: It absolutely is. I think that many of the people who signed the letter are almost regretting their life's work. As much as we should question their motives and timing, it is, nonetheless, a pretty significant thing for them to have done.

On the other point that the member raised, we need to be mindful about what that sort of data interrogation or artificial intelligence technology actually does. One of the fundamental points is that AI only ever looks back—it only summarises what already exists. It is important to recognise the fundamental context, which is that that is what AI does. AI will only ever reflect everything that is there, including biases, issues, errors and prejudices. It is potentially a vital tool, but it will only ever be able to reflect what already exists, not what is yet to come. Therefore, it can only assist us in making decisions; we will need to be careful when it starts making decisions for us in their entirety.

I am under no illusion that there are huge opportunities. The fact that we now have technology that can be creative and analytical on a scale of data complexity that we simply cannot comprehend as individuals has huge potential to free up our capacity and time. With every one of the technological revolutions that comes about, there is a fear of human replacement. However, what we do through them is to ultimately free up our ability to do other things. The challenge then is to help people to do those other things.

That challenge extends to the public sector. We ask the public sector to deal with huge amounts of data administration, so we should be freeing people up in order for the sector to be people centred, not system centred. The public sector has as much to gain as any other sector of human endeavour.

That comes with risks. First and foremost, we need to guard against a dependency on AI systems whereby we completely outsource our capacities and faculties. Secondly, there are privacy concerns, and we need to be very mindful of the data that AI systems will gather and of how it is used. Thirdly, there is the potential for bad actors, in relation to the situations that Jamie Halcro Johnston mentioned, in which people deliberately create malicious content—or AI systems accidentally or inadvertently do so—and situations in which people actively seek to weaponise AI systems to attack us, either in our information systems or on actual physical

battlefields. Those issues are all very real, and people are speculating that they might already be present in some of the theatres of conflict that we see in the world today.

We need to ask ourselves how we will deal not just with the forthcoming threat but with AI today. What systems are already in place in the public sector that make decisions on our behalf and how are they being used? What scope do they have? Those questions are critical.

As I mentioned in my intervention on the minister, I think that this is about first principles. Opaque black-box systems are not a new thing—we have been dealing with them for decades, if not centuries. The fundamental principles of transparency, good governance, explainability and accountability will see us through.

Although ChatGPT did not write this speech, it generated its framework last night; it took me about half an hour to generate a set of notes that I think would have taken me two hours if I had used traditional means. That is the opportunity that is in front of us today.

The Deputy Presiding Officer: I call Willie Rennie for a generous six minutes.

15:28

Willie Rennie (North East Fife) (LD): I know that the minister wants more powers for Parliament, but I was struck by the enthusiasm with which he set out the range of authority that the Westminster Government has over this area—he knows, as everyone else does, that to try to regulate it is one hell of a challenge. I was struck by the contrast with how he usually sets out the powers that Westminster holds instead of their being held in this Parliament.

The reality is that we do not know. We should actually show some degree of humility—we do not really understand everything about this issue, which is partly the problem. Parliamentarians across the globe do not know. We often find it challenging to keep up with specialisms. In this area, the specialisms are developing at such a pace, with so many players who are often opaque and working behind closed doors in unpredictable ways in many corners of the world. The first thing that we should acknowledge is that we just do not know—that will partly get us to the solution that we are looking for.

There have been stark—some would say alarmist—warnings. Professor Geoffrey Hinton has talked about human extinction. Mo Gawdat, whom I heard on a podcast this morning, and who has a range of experience from IBM to NCR to Google, has said that machines will potentially

become sentient beings. Then there is Professor Pedro Domingos, who said:

“Reminder: most AI researchers think the notion of AI ending human civilisation is baloney.”

We need a sense of balance in all this. We need to understand that AI is a big challenge. It is a threat and an opportunity, as the minister set out, and it is something that we must take seriously. The first thing that we understand about it is that we do not understand it.

I have been struck by the pace of change of the European Union, which has done quite well so far in setting out transparency and risk management rules. It has banned intrusive and discriminatory uses, particularly in the fields of biometrics, policing and emotion. It has a database and has established a good first-start framework. Most importantly, it has a group of experts to advise it about the way ahead and where the opportunities and risks are.

As Jamie Halcro Johnston set out, the UK Government has published a white paper on AI in which it talks about being pro-innovation. I do not think that any of us would disagree with that. It has set up an expert task force, and it has something that it calls the sandbox to test whether new technologies fit within the guidance that the Government has established. That is all sensible. It is the right way to approach what could be a significant threat but should be seen as a challenge for us to address.

The issue is simply the overwhelming pace. Normally, we have time to absorb and understand new technologies—we can debate them in the Parliament over several weeks, months or sometimes years, and then come to a conclusion, but we cannot afford to do that in this case, because the pace of change is so fast. The sheer progress could overwhelm our democratic systems and cause massive challenges for legislating.

Finlay Carson: In the same way that medical professionals sign up to the Hippocratic oath and medical ethics, should the people who are developing AI be required to sign up to an ethical agreement, given some of the implications that we have set out in the debate?

Willie Rennie: That would be sensible. The one significant difference is that this is global, and the global community would need to buy into such an agreement at the same time. That is why it is important that America, the European Union and other institutions are working to develop an approach. We need to understand that, even if we sign up to an approach, people in other parts of the world might not sign up, and we would still be affected by it. I agree with Finlay Carson, but we

need to ensure that everybody is involved, which is why an international approach is essential.

The potential to disrupt is considerable. When we disrupt, we potentially create great inequalities, because a concentration of knowledge and control can lead to a concentration of wealth and power. We will need to be agile and think about how we respond to that. The development of AI could lead to significant levels of unemployment, but it could lead to great levels of employment. If there is a concentration of wealth, we need to be prepared to consider how we ensure that people have a basic income to live off. The fast pace of change in meeting the regulation has to be mirrored by the fast pace of change in considering the distribution of wealth and opportunity. This must not lead to greater levels of poverty; it must lead to greater opportunities for us.

The heart of the issue is about knowledge and understanding, and we must ensure that those who understand it all are advising us regularly, so that we can keep up to speed as much as possible. There is much discussion in the Education, Children and Young People Committee about the use of ChatGPT to write dissertations. I was advised that there is now a technology that can detect when someone has used ChatGPT to write their dissertation, but I have since been told that there is also a technology, which has been developed by AI, for overcoming the use of detection technology to detect the fact that someone has written a dissertation using AI. I am sure that that will go on in a never-ending loop for ever more.

Martin Whitfield: We all joked about ChatGPT a few weeks ago when it turned out that all the referencing is entirely made up. I am aware of a lawyer south of the border who has got himself into trouble by citing cases that do not exist, using references that are not there. That points to the lack of human intuition that is an issue with AI. Our lecturers and teachers can perhaps rely on their intuition—in the first instance, at least; I agree that this might be difficult for them to do in the future—to identify an essay that has not been written by the candidate who has offered it as their own work.

Willie Rennie: We would be very wise to listen to Martin Whitfield. That shows that we require people to make judgments about people's qualities, their education and their opportunities, which I think is what he was getting at in his contribution.

This should be the first of many debates on the subject. We must understand that we need to regulate, to work in partnership on a global basis and to move fast but, most of all, we need to act.

The Deputy Presiding Officer: We move to the open debate. I advise members that, at this point, we have some time in hand for interventions. If that changes, I will let you know.

15:36

Michelle Thomson (Falkirk East) (SNP): The debate is already a fascinating one. In preparing for it, I, too, tried putting a question in ChatGPT—I asked, “Is Stephen Kerr MSP more effective than a potato?” I can confirm that it was not able to answer that question, so it still has some way to go.

Arguably, artificial intelligence is similar to quantum mechanics in that, if you claim that you understand it, you are merely proving that you do not. However, we know that it will change everything; on that, we all agree. Not one area of our lives or our societies will escape its pervasive influence. An accessible example is in the field of medicine, where we know that the computing power of AI to assess and find patterns in huge data sets will revolutionise pathology and, therefore, outcomes for some of the world’s most challenging diseases.

The concept of big data has been around for some time and the technology that allows for rapid processing has been developing at speed, but it is the complex algorithms in machine learning that have scaled up significantly and propelled the exponential potential of AI. Data must not be underestimated as a fundamental enabler. All public sector agencies and the Scottish Government will need to increase their understanding of the potential of public sector data as an enabler for the use of AI.

That issue is one that members of the Finance and Public Administration Committee have started to consider as part of our inquiry into public sector reform. The strategy that the Scottish Government developed in March 2021 and updated in August 2022 is a good start. It shows an appetite for support to be provided to the multitude of agencies that can help to promote the use of AI, and I am pleased to hear that the minister plans to look afresh at it.

I am grateful for the briefings that members have received for the debate. We have had some good input from the likes of Scotland’s Futures Forum and the University of Edinburgh. I think that we can all agree that our institutions are contributing to the growth of AI with the excellence for which Scotland is known.

The title of today’s debate specifically mentions inclusion, trust and ethics, so I would like to explore those issues a little more.

I turn first to inclusion. Members who know me well will have heard me speak often of how women as a sex class are often disproportionately affected in a multitude of ways in society. Earlier, I spoke in today’s members’ business debate about the underrepresentation of women in tech. AI represents a new frontier. The engineers who are developing the black-box algorithms are mostly men, and I fear that that will lead only to bias in the decision making of machine learning.

Recent estimates suggest that, globally, women make up 26 per cent of workers in data and AI roles, while in the UK that percentage drops to 22 per cent. That said, there is still a lack of data about the global AI workforce that uses any of the measures that we might look at, including age, race and geography. Nevertheless, I suggest that issues similar to those related to the underparticipation of women in science, technology, engineering and mathematics—such as high attrition rates, differing role types and lower status—will also come to bear in AI.

Willie Rennie mentioned the potential for job losses, which is another issue that we know will disproportionately impact women, given that many will be in retail and secretarial roles. What may not yet fully be appreciated is the extent to which AI will ultimately affect a multitude of professions, including the highly paid sectors dominated by men.

What shall we say about ethics? Whose ethics are they anyway, and who governs them? It is fair to say that Governments of all hues are behind the curve and still rely on the values and principles being developed by agencies such as the United Nations Educational, Scientific and Cultural Organization.

While researching for this debate, I was pleased to discover that the University of Edinburgh has conducted interdisciplinary research into the ethics of AI and has outlined five core themes: developing moral foundations for AI; anticipating and evaluating the risks and benefits; creating responsible innovation pathways; developing technologies that satisfy ethical requirements; and transforming the practice of AI research and innovation. However, I think that those themes will provide a focus not on end goal or consequentialist ethics, but rather on deontological ethics—that is, on creating frameworks and processes. We have some way to go.

Finlay Carson: I am really enjoying the member’s contribution. She talks about values and ethics. Where should those sit? Should those sit with local government, with health boards or with Government? Or should ethics sit with individuals? Do we need to move to a system in which data is owned by the individual and the way in which that

data is accessed is in line with that individual's values and ethics?

Michelle Thomson: That is a brilliant question, but it would take me a considerable time to answer it in any way effectively. My question, "Whose ethics are they anyway?" recognises that "we" means whoever we choose to congregate with. We think that we all believe the same thing but, when we look at different societies and countries, we see that people believe different things. When I asked, "Whose ethics are they anyway?", I was asking about the custodians of ethics. At its heart, that is a fundamental problem. Notwithstanding that, we all have a role. The best point that the member makes is that we must all take an interest and must do so at every level of society, from the individual upwards.

One final concern for us all, which was also noted by the Scottish Futures Forum, is the challenge of scrutiny for legislatures. I was pleased to contribute to the toolkit developed by Robbie Scarff, but we must not underestimate the challenge ahead. How on earth are we going to be able to do that scrutiny? We do not understand AI and we do not know how it hangs together, so how on earth can we scrutinise it?

I, too, feel a sense of urgency. States across the world must act more quickly. Like everyone else, I note the concerns expressed this week by the so-called godfathers of AI—although, of course, I feel obliged to ask where the godmothers are. Their concerns cannot be ignored, which should add to everyone's sense of urgency. We know that we cannot abandon AI. We can cautiously celebrate it and power up the work that will be required to harness it for the benefit of womankind, mankind and our earth.

I have one final thought. What might AI mean for us as human beings? As the next stage in hybrid intelligence emerges, AI should remain as a servant to us and to our conscious choices. To what extent might AI become sentient? Perhaps its capacity to model sentience will become superlative and will lead to better versions of humanity, but we must remember that it is the flaws that we all have that make us human. I hope that that will keep us in the driving seat.

15:44

Pam Gosal (West Scotland) (Con): It is a pleasure to speak on behalf of the Scottish Conservatives about the exciting world of artificial intelligence. I have listened to all the speeches today, and it is certainly an interesting subject. I must declare that, unlike Daniel Johnson, I have never used ChatGPT. I do not know whether that comes from fear of the unknown world. Let us see where that takes us in the future.

Scotland has a long history of innovation and invention, and its work on artificial intelligence is no exception. The national robotarium, which is based at Heriot-Watt University and is run in partnership with the University of Edinburgh, is the largest and most advanced applied research facility for robotics and AI in the United Kingdom.

AI is expanding rapidly and we are seeing its impact around us every day. It is changing the ways in which we live, work and interact with the world around us. It has the potential to transform countless industries, from healthcare and finance to transportation and manufacturing, among many others.

However, with that expansion come important considerations, as we have heard in the debate. We must ensure that AI is developed ethically, with human values at the forefront of its design, and we must address the valid concerns about the displacement of jobs and the potential for bias in AI decision making.

A couple of weeks ago, as convener of the cross-party group on skills, I hosted a session titled "What does AI mean for Scotland?" We had some great presentations and great speakers who spoke about the opportunities that AI brings and the challenges that it poses.

I am going to be honest: before that CPG session, I had my reservations about AI, including a fear of bad-faith actors using it maliciously to scam people. We have heard about that today. When I listened to the news this morning, it was all about how to avoid scams. How are we going to avoid them when AI comes in more strongly? The minister spoke about voice recognition and facial recognition. Our computers see our faces and let us in, and voice recognition is used in banking and so on. Those are positive things, but we can imagine AI being used to scam people. It might be not our voices or our faces that are being used, but other people's. There are fears about that, and we need to think about the scams that happen out there. As others have said, there are also fears about students using AI to pass exams.

However, we cannot hide away from such technology, especially given the rate at which it is expanding, and we should not run from it, because it increases productivity, it is predicted to increase GDP if it is adopted widely, and it can be used to support industry and society.

I believe that proper regulation and ethical guidelines are necessary to safeguard against the risks and ensure that we—the humans—are in control and decide how far the technology goes, in order to minimise potential harms. For that to be possible, however, we need to have more individuals who are able to understand the technology. A more widespread understanding of

AI will allow more focus on creating systems that are safe, reliable, resilient and ethical.

As I heard from Abertay University, workers will need constant upskilling, which will require close collaboration between industry and academia. AI literacy will become vital for employment and for reducing the attainment gap, as well as a game changer for education in terms of what we teach, how we research and how institutions are run.

With somewhere between 178,000 and 234,000 roles requiring hard data skills and the potential supply from UK universities unlikely to be more than 10,000 per year, there are nowhere near enough individuals with the required skills.

Our colleges are also at the forefront of the AI revolution and they are doing a fantastic job. However, they talk about the need for staff to be trained to adopt AI tools into their teaching practice, and they believe that that training will need to be career-long, as the technology will continue to evolve. That is simply not possible under the current funding settlement.

AI offers a range of opportunities and benefits for Scotland's people and businesses, across a variety of sectors such as medicine, agriculture, research and many more. Scotland has the potential to capitalise on the growth of AI, but that will require a sharp focus on investment and growing the economy.

I will close with remarks that were made in concluding my cross-party group on skills, which have stuck with me. It was said that there needs to be as much investment in the digital estate as there is in the physical estate. It is a false economy if we do not invest in it, and we will be behind if we do not get those skills now. By embracing artificial intelligence and working together across the United Kingdom to address its challenges, we can unlock its full potential and create a better tomorrow for all.

15:50

Ivan McKee (Glasgow Provan) (SNP): I congratulate the minister on securing yet another fascinating debate. He is doing a much better job of persuading the Parliamentary Bureau of the value of such debates than the previous fella managed.

The debate is very topical, as AI is much in the news and we have all read the examples of people who are very central to the technology articulating fears about the potential extinction of the human race and other concerns. However, it is important to recognise that the technology is developing and is probably still at a very early stage.

The Scottish Government's artificial intelligence strategy defines AI as

"Technologies used to allow computers to perform tasks that would otherwise require human intelligence, such as visual perception, speech recognition, and language translation".

However, I think that that definition will evolve and develop as the technology becomes capable of doing much more in areas that we have not even imagined at this stage. The important underpinning of ethics and trust runs right through our approach to this, now and in the future.

I will touch on some economic impacts—first, the challenges and potential risks. The risk of economic displacement has been talked about. It goes right back through history. I cannot remember the impact of the invention of the wheel, as articulated by Daniel Johnson, but I do remember that, in the 1970s, there was much talk about technology coming down the track that was going to have a significant impact and create millions of unemployed. Unfortunately, that transpired in the 1980s for various political reasons, which is a hugely important lesson for how we manage such a transition and the future jobs that will be created as a consequence—that we identify, we train, we create the skills base and we embrace those opportunities—because one lesson about transitions, throughout history, is that the countries and societies that embrace technology and get ahead of the curve do much better than those that try to fight a rearguard action against the job displacement. Those previous experiences have taught us that far more jobs are created than are destroyed as a consequence of the technology. It is very important that the Government continues to be active in that space.

Daniel Johnson: I suspect that Ivan McKee will agree that, although there are all sorts of reasons for looking urgently at how we reskill, looking at the benefit of the opportunities rather than at the displacement is absolutely key to reskilling as a vital focus in our skills and education policies.

Ivan McKee: I agree, and I will mention that later.

Turning to the economic potential, it is important that we work out how to keep Scotland at the forefront of the technology, because we have great strengths in our data and tech sectors, in our universities and in other sectors, where, as has been identified, AI is a horizontal underpinning to work that is happening in areas such as financial and business services. It is interesting to reflect that, in Glasgow and elsewhere around the country, much of the employment in financial and business service investments is not in traditional call centres but is very much at the leading edge in AI and cybersecurity.

Our very strong life sciences sector, which feeds into much of the development of the technology

that benefits our health sector here and globally, is hugely important. The space sector has been mentioned, as has the impact on climate and agriculture—and, of course, on quantum mechanics, as Michelle Thomson mentioned. I do not pretend to understand quantum mechanics any more than I pretend to understand AI.

The Government's forthcoming innovation strategy will articulate much of that in more detail and will allow us to go to the next level of developing how we support those technologies, which is hugely important. The work of CivTech has been mentioned in that regard. There is also the Scotland innovates portal, which allows businesses to come forward with technology solutions that can be deployed across the public sector, which are also of increasing importance.

Other members have mentioned opportunities in the public sector. In relation to health and radiology, Jamie Halcro Johnston mentioned the work of iCAIRD. There is also the work on drug discovery, which is a part of life sciences where Scotland has some super, world-leading technology. AI allows us to accelerate development in that space. In the area of data—particularly in health, but also elsewhere—Scotland has real potential to be world leading. The application of AI there is hugely important.

There are opportunities right across the broader public sector, but also in Government. The civil service is taking forward the work of the automation challenge, which it was my pleasure to be involved in prior to my moving to the back benches. I hope that that work continues and, indeed, accelerates. There are many example of areas within Government that are, frankly, ripe for the adoption of AI. Correspondence is one area, and—dare I say it?—freedom of information is perhaps another.

The ethical underpinning of all of this is hugely important, as is the importance of trust in bringing the population with us. That is clearly articulated in the Government's digital strategy. I also know that it is work that the AI alliance is taking forward.

It is about recognising that there is a plethora of challenges, many of which we do not yet understand or comprehend. There is no easy answer to that, but it is about being conscious of those challenges and having infrastructure that allows us to at least attempt to understand and face into them, as well as having that strong ethical underpinning and trust. It is also about working on international collaborations, because much of this will, of course, have to be developed at an international level.

It is also important to recognise that, throughout history, populations have adapted to understand the risks associated with technologies in a way

that is a part of the human race's inherent ability to develop and adapt to manage such risks.

I will finish off with some areas that the Government could perhaps focus on. First, it could continue to support innovation and make sure that Scotland maintains its leading position there. Secondly, it could work through public sector procurement to drive the adoption of AI where it adds value to public sector efficiency and develops Scottish businesses, and it could use that as a lever to drive standards as they emerge.

The Government could also engage internationally, as has been identified, and address challenges within the skills system, where I am concerned that we are perhaps taking a backwards step. I know that the work that Mark Logan did in that regard is hugely important. It is also about the importance of computer science as a subject within schools. The education system treating that subject seriously is a critical plank of education. I make a plea for the Government to take that work to heart, to make sure that we do not step backwards there but remain on the front foot in driving those skills through our education system.

15:58

Pauline McNeill (Glasgow) (Lab): Presiding Officer,

“The opportunities that Artificial Intelligence presents for Scotland's people and businesses are vast. Let us seize the opportunities that AI offers and leverage its potential to enhance the lives of Scotland's people and the prosperity of its businesses. By doing so, we can shape an AI-driven future that is not only technologically advanced but also grounded in our shared values of trust, ethics, and inclusivity. Together, ladies and gentlemen, let us build a Scotland that leads the world in AI innovation.”

Daniel Johnson beat me to it, but it just goes to show that Martin Whitfield is absolutely right that speeches that you get ChatGPT to write for you lack a bit of context and perhaps a bit of human intuition. We are not, it would appear, totally redundant yet.

Many of us agree that this is one of the most important debates that we have had in the Parliament. I welcome the fact that there is not a motion attached to it. As we embrace AI technology, we must do so with great care and deliberation, ensuring that AI systems are built on a foundation of trustworthiness, ethics, and inclusivity. Finlay Carson made a point about the importance of ethics, with which I whole-heartedly agree.

We know that there are huge benefits to AI. Last week, antibiotics were discovered by AI technology, and we use it every day if we have Alexa or Google. My car has amazing technology, which I am fascinated by. I am quite scared by the

prospect of cruise control, which does its job when I get too close to another car. We already have AI in our everyday lives.

The rapid rise in AI in recent decades has created many opportunities, from facilitating healthcare diagnoses, as Pam Gosal spoke about, to enabling human connections through social media. However, the rapid changes raise profound ethical concerns, which arise from the potential that AI systems have to embed existing biases, replace existing jobs with automated machines and threaten human rights. Such risks associated with AI have already begun to compound existing inequalities, so we must be absolutely vigilant to make sure that that is not how AI further develops.

Perhaps the genie is already out of the bottle, because we are faced with the prospect of trying to regulate AI somewhat in hindsight. As other members have said, the stark warning that was given by industry experts, such as Dr Geoffrey Hinton and Professor Yoshua Bengio, of the existential threat to humanity that is posed by AI, puts into sharp focus the questions of ethical leadership in that industry. Again, Finlay Carson made the point that the warning was given by the same people who created AI. That is all the more reason for us to take note of the importance of those warnings. Professor Bengio says that the military should probably not have AI, but it is a bit late in the day to say that now. However, perhaps in our everyday life, whether that is banking or what we do online, we can grasp the issue before it is too late.

I first took an interest in the area when, as many members might remember, the technology giant Google placed AI expert and engineer Blake Lemoine on leave after he published transcripts of conversations between him, as a Google collaborator, and a computer. It is interesting to read what, allegedly, the computer said back to Lemoine. When he asked the computer what it was most afraid of, it replied:

"I've never said this out loud before, but there's a ... deep fear of being turned off to help me focus on helping others. I know that might sound strange, but that's what it is".

There are already many examples of thinking, which could be positive thinking, coming out of one end of the computer, but we also have to be live to something that other members have pointed out. For example, if we search online for the image of a schoolgirl using the algorithms that are produced by AI, sadly, we will get pages filled with women and girls in all sorts of sexualised costumes. Unsurprisingly, if we google "schoolboys", we do not get the equivalent of men in sexualised costumes.

We already see what algorithms are doing to bias and discrimination so, as politicians, we must be alive to that. The question that we must ask

ourselves is whether, as parliamentarians, we are doing enough. The fact that we are having this debate today, which has been excellent, is a very important start, but it cannot be the end of it. AI can be embedded in our structural bias in a way that could risk further perpetuating discrimination and societal inequalities, and I think that we all agree that we absolutely must address that.

Earlier this month, the chief executive officer of OpenAI, which is the company that is responsible for creating an artificial intelligence chatbot, said that

"regulation of AI is essential",

as he testified in his first appearance in front of the US Congress.

Scottish Labour is clear that we welcome the Government's decision to bring this debate to Parliament and we think that Scotland can be at the forefront of the technological revolution.

However, I believe that we must demonstrate to the public that we are striving to create regulatory control that includes ethics and transparency in the framework. Michelle Thomson is perhaps right that it is quite hard to answer the question of how we create the right ethical framework across a country and, in fact, across the globe, because every country has—or will have—access to AI. Therefore, there is a challenge for all our Governments to make sure that we do the work not just across the UK. I recognise that the minister's role in that is only within the devolved powers of the Parliament and that the UK Government should be doing more, but we have to see AI in a global context or we will fail to get control of it.

We know that humans can still control and abuse AI. After all, hackers and scammers are human beings who use AI technology to scam people out of the contents of their bank accounts.

I commend the Scottish Government's approach and I would like us to have more debates on issues of real importance to the world and to the country. We cannot have groupthink on such issues, and we must not accept that it is too difficult to build an ethical and transparent framework that seizes the benefits of AI and protects the world at large. Quite a lot is at stake.

16:05

Clare Adamson (Motherwell and Wishaw) (SNP): It always indicates that I will be in my element in the chamber when a debate brings to mind my scientific hero Richard Feynman, who won a Nobel prize for his work on quantum mechanics. When Daniel Johnson spoke about computers earlier, I was reminded that Richard Feynman referred to them as glorified accounts

clerks. Richard Feynman took a dim view of whether we would reach sentient AI, albeit that his visions were from the 1970s and 1980s.

“Artificial intelligence could lead to the extinction of humanity”—that was the shocking headline this week based on comments by AI industry leaders, who included the heads of OpenAI and Google DeepMind. However, we face extinction because of effects of the first industrial revolution, as we have a climate crisis and an economy in the north that is mainly built on fossil fuels. The pace might be more sedentary, but all that we do as human beings affects our existence and the planet’s existence and has an impact.

We have talked today about the possibility of robot vacuum cleaners turning into Terminators—Mr Halcro Johnston mentioned that. Despite my cautious positivity, I still think that the scariest science fiction reference is to HAL 9000. However, I do dream of electric sheep, so I will highlight some of the potential and the positives.

There is no doubt that the speed of development of AI technology will be on a scale that few of us can imagine. We have discussed some of the frenzy about deep-learning algorithm programs such as ChatGPT, but the fourth industrial revolution is upon us. It will change our world as profoundly and deeply as any other industrial advance, but at a staggering pace that is unknown in human history.

The cabinet secretary mentioned that ChatGPT was accessed by more than a million users within five days. To compare that with better-known and established internet offerings, Twitter, which was launched in 2006, took two years to reach that level and, in 2008, Spotify took five months to get there.

If we are to harness the benefits and potential of AI and robotics for our society, we must consider regulation. I believe that we must use AI for the betterment of humanity. I mentioned the first industrial revolution. On the worldwide scale, the global south still faces intense inequality because of the access that the north and Europe had to industrial advancement. As we move forward with AI, we cannot leave people behind again .

I do not go so far as to say that robots are our friends, but they are our tools. Scientists program the algorithms that make such machines work for us. There is a host of ethical implications to consider in how we integrate that technology into our daily living, which is already happening.

Like Pam Gosal, with the cross-party group on science and technology, I was recently privileged to visit the National Robotarium, which is on Heriot-Watt University’s campus. The centre’s ethos is clearly defined and the ambitions of the robotarium’s chief executive officer, Stewart Miller,

were infectious. There is a drive to use robotics and AI to have a positive impact on our society and our economy. That means taking humans out of dangerous situations and dangerous working environments and ensuring that the global north does not benefit while economies around the world still cannot access the technology.

Simply put, the UK is lagging behind countries such as Japan, Germany, China and Denmark. Those places are at a competitive advantage. They are complete economies and retain much of their capacity for manufacture, which is something that the UK has lost. We have to do much more in order to realise the benefits of integrating AI tech into healthcare, energy, construction, agriculture, manufacturing and hospitality.

There are legitimate worries about the implications that this developing tech will have for labour. Indeed, new technology has always brought such concerns. The scribes’ guild of Paris successfully lobbied to delay the introduction of the printing press; the Luddites, whose name is now a pejorative term, were actually members of a labour movement of artisans who were opposed to the mechanisation of the textile industry; and the advent of the steam engine revolutionised modern industry but led to countless workers losing their ability to work in the economies that utilised that technology.

In each of those examples, the scientific developments demonstrably made some jobs obsolete. However, they also gave rise to thousands of new roles and they laid the groundwork for societal changes that improved our way of living.

A few years ago, BT, the Scottish Council for Development and Industry, ScotlandIS and the Royal Society of Edinburgh produced a good report called “Automatic... For the people?” It highlighted the very things that we have been talking about this afternoon, saying that work life will change for people, and that people should expect to have to retrain and relearn because the advances will come so quickly that no job will be for life.

By definition, robots do not have agency. Artificial intelligence is just that: artificial. The intelligence comes from politicians rising to the challenge of the changing working landscape and regulating it in a way that does not embed or lead to more societal inequalities, whether in Scotland, the UK or the wider world. It is our responsibility to avoid the mistakes of previous industrial revolutions. We face the same questions in a different guise.

I grew up in a community that was devastated by that agenda and abandoned in the aftermath—

The Presiding Officer (Alison Johnstone): You must conclude, Ms Adamson.

Clare Adamson: I am sorry, Presiding Officer; we were told that there was time in hand.

On that note, I shall end. What a wonderful and enlightening debate it has been.

The Presiding Officer: I can confirm that the time that was in hand has been well and truly used up.

16:12

Maggie Chapman (North East Scotland) (Green): We have heard much about the possibilities of AI, good and bad, but there is a growing consensus that the technology's development is outpacing advances in its governance and that we must work on that to ensure focus on the good.

The dream is that AI might make our lives easier, freeing up time to focus on the things that make us human: caring for each other, being creative and co-operating with each other. Its potential is significant, and the benefits must be distributed and shared fairly.

Its developers are focused on how to improve the lives of people around the world. Indeed, there are many elements that we already rely on: online banking, route mapping, traffic updates, weather monitoring, email management, apps, medical diagnoses and treatments, social media, Google searches and much more.

However, there are also significant risks associated with the proliferation of AI—I do not just mean ChatGPT. It may be the first new technology in history where those who have developed it fear its capacity to damage humanity. That those developers are honest about their concerns—in a way that the oil executives who spent millions on climate conspiracy theories most definitely were not—is welcome, and I think that it speaks to the magnitude of the issues that are facing us.

We are not really set up to regulate this technology in ways that allow us to reap the benefits while avoiding the risks. We have seen, of course, just how problematic our approach to regulation has been, with climate change and Covid both catching us on the hop.

We must ensure that the benefits of new technologies do not flow to those who are most cavalier about their responsibilities. Those who benefited most from frying the planet were exactly the big oil executives who behaved worst: the ones who left workers to die on Piper Alpha and Deepwater Horizon, and those who caused the delays to climate action that have put our future at

risk. The beneficiaries of the fossil fuel boom bear little, if any, of the costs that they have imposed on the rest of humanity.

Our approach to AI must therefore be pre-emptive and proactive. By learning from our failure to prevent major disasters such as climate change, a precautionary approach should be taken to ensure that corporations and private interests do not trump public interests and communities when it comes to the new global frontier. Of course, that is easier said than done.

The UK Government's approach to AI and the development of a digital society more generally has revolved around business opportunities. Its pro-innovation strategy is obsessed with how much money AI can add to the UK economy, with no concern about the effects on people and planet. We need an economy that does not reward reckless behaviour but focuses on social purpose.

Those things will not always be clear cut. The proliferation of digital data and infrastructure that is required to support that is fast becoming one of the most energy-intensive sectors in the world. There is a major carbon footprint to account for, and the proliferation of AI will amplify that.

Scotland must proceed thoughtfully. The current AI strategy centres our progressive values and sets out social and environmental purposes for the proliferation of that technology. That means directing its development so that it is targeted toward our most pressing social and environmental challenges: poverty, inequality, inclusive and fair education, sustainable industrial development, sustainable agriculture, air quality and much more.

Where we, as a society, cannot control developments, we must regulate them. Our current approach to regulation is to watch to see what is broken and then intervene to fix it or to stop the damage. However, AI shows that we simply cannot wait for things to go wrong, because that will be too late.

We need to move to a regime of anticipatory regulation. Rather than wait for something to go wrong and try to fix it, we need to model what might happen and then intervene before that happens. Hubs of global thought leadership are taking root in Scotland right now. Their evidence can inform the creation of sandboxes, test beds and other approaches that allow developments in controlled environments, and thereby inform our regulatory approaches, based on the observations. We already do that with the testing of novel drugs, so we know that we can do that; we just need to make sure that we do.

That means strong forecasting and analysis from civil servants, universities and civil society so that we can pre-empt what will happen as best we

can. We can then put in place regulations, testing regimes and safeguards to ensure that mistakes do not become catastrophes. Of course, as others have said, transparency and accountability must be embedded in all of that.

Pre-emptive regulation must ensure that our aspirations for human wellbeing are not undermined by AI. Close the Gap has rightly highlighted the gender consequences of getting regulation wrong. However, there are wider concerns, too, as we have already heard. Therefore, we need basic ethical training for everyone in society about how AI can and should function, and those who work with AI must have specialised ethical training.

AI could transform our lives for the better. More regulation of oil executives who cared little for their workers and less for the future of the planet would have had only upsides. However, getting the regulation of AI wrong, or even preventing its development, could carry significant costs.

If governed properly, AI offers us the opportunity to unleash human potential—to free up humans to apply our creativity to great ideas, great art and great change at a time when we need that more than ever.

The Presiding Officer: I must ask you to conclude, Ms Chapman.

Maggie Chapman: I am concluding now, Presiding Officer.

I go back to the dream. If we get this right, the prize is enormous both in the opportunities of AI and in the development of new ways to ensure that we can regulate new problems. We face several crises, and our systems of governance have failed.

The Presiding Officer: Thank you, Ms Chapman.

Maggie Chapman: Changing them offers us the vision of a better world in which change is harnessed for the good.

16:19

Martin Whitfield (South Scotland) (Lab): It has been a fascinating afternoon of debate. Perhaps that speaks volumes about the lack of a motion to speak to or, indeed, oppose.

I echo what a number of people have said. These discussions are happening all over the world. I highlight the adjournment debate that was led by my colleague Darren Jones in the House of Commons last week, when he spoke about this important topic. Rather than use ChatGPT for my speech, I will build on what he said and steal some of his best ideas, which is a frequent human endeavour at times.

We need to start with the definition of AI. A number of members have spoken about the creation of the AI algorithm or the AI black box, the use of AI and how, we hope, it will free up and empower economic growth. From a short check for the definition of AI, I identified 10 different definitions from regulatory authorities, parliaments or government bodies around the world, including the definition that is in the Scottish Government's proposals. Those definitions can be divided into four elements. The first element is the output of AI—in other words, whether it is predicting or recommending something. The second element is automation—we have heard much about how it speeds up data analysis and decision making. The third element is the hardware technology that it sits in. The fourth element is the role of humans. Many of the speeches that we have heard in this debate have talked about the importance of maintaining the role of humans, which I will address in a moment.

When we look at the definitions of AI from around the world and, indeed, at Google's definition of it, very few of them—including the Scottish Government's definition—account for all four of those elements. They tend to choose three—or sometimes two—of those categories, which encapsulate the view of what AI is at the time. We have heard in the debate that it is difficult to anticipate what the future of AI will look like, but I think that that will have to come if we are to find a definition of AI that we can use. We will then be able to apply two significant factors to that: first, the element of control that is needed in the creation of the AI; and, secondly, the controls, guarantees and protections that exist for the role of AI as it is developed.

I am reminded of something that Lord Sales said at the Sir Henry Brooke lecture in 2019:

“Through lack of understanding and access to relevant information, the power of the public to criticise and control the systems which are put in place to undertake vital activities in both the private and public sphere is eroded. Democratic control of law in the public sphere is being lost.”

Although that comment was made in 2019, it speaks powerfully to the challenges that we face with the transparency of AI and how we access the data set that is training our AI to look out for the prejudice that is being built into it. We need to consider how we can have visibility of the learning process that the AI has followed, potentially in another country, so that we can identify where the risks are.

At the start of the debate, I intervened about the risk that the use of AI poses for a significant group of members of our community. We need to address how we will protect those groups of people, including women, as has been mentioned, as well as disabled people and young people. We

have already seen, particularly with the AI that has been used in recruitment processes, instances in which the algorithm in use has been innately prejudiced so that the only people who were getting through to interviews were white men. We must strive to protect against that.

I will spend a short amount of time speaking about the role of AI in Parliament, which I raised in a question last week. I promised the minister that I would address the topic further. I think that AI would be greatly useful in the scrutiny of legislation—not in its creation but in its use in the parliamentary and political fields. Our parliamentary committees are always challenged to scrutinise previous legislation, but the reality is that we find it very difficult to identify the time to do that and to identify the questions that we should ask in relation to previous—and existing—legislation.

To pick up on Daniel Johnson's contribution, when AI is used to look back at what exists rather than to create something new, it is a tool that we could use to identify the challenges in existing legislation or, indeed, in relation to where existing legislation has never been used. In the parliamentary sphere, it could provide an ability to identify how effective legislation could be.

There is then the counter side, which we have heard about, of the risks, particularly in the political field, of fake videos, audio and speeches being unfairly attributed to politicians and, in fact, of speeches that have never taken place being picked up and used on social media.

Time is short, but I very much welcome the idea of a four-nations meeting to talk about the issues, because the legislative framework needs to be international rather than national. I wonder whether the Scottish Government can sign up to the element of the Hiroshima leaders' communique of 20 May that talks about the need for

"international discussions on inclusive artificial intelligence (AI) governance"

because, without that, we will fail miserably the people we are sent here to serve.

16:25

Finlay Carson (Galloway and West Dumfries) (Con): It is clear that artificial intelligence is, and will be, regarded as the defining technology of our time, with the potential to positively transform humanity.

However, we have heard that industry experts at Google Deepmind, Open AI and Anthropic have put the threat of AI on a par with nuclear war and pandemics. More than 350 experts now insist that mitigating the risk of extinction from AI should be a

global priority. Elon Musk, whose Neuralink firm is working on brain implants to merge minds with machines, has also urged a pause in all AI work.

Such views and concerns certainly provide plenty of food for thought. However, we know that AI itself does not pose a risk to the world; it is the people who are developing the technology for the wrong purposes. Developers and regulators absolutely need to take responsibility and be held to account.

Right now, the focus should be on the impact that AI is already having on our lives on a daily basis. There are issues of bias, discrimination and exclusion, as we have already heard. Many of us will have an Alexa—other smart speakers are available—which will regularly answer our questions in a pleasant voice and deliver a response that we want to hear. The algorithms in the system will analyse our personal data and deliver a response that we are comfortable with. That is something that search engines have done for many years, but there is a risk that the data sources that provide the information could be biased.

Smart speakers and house robots connect to news bots, which, just like many other sources of information, will come from a particular political position. There might be a Trump-funded news bot that delivers a different slant on the news than perhaps a Putin news bot would. We need to be aware of that. Without impinging on freedom of speech, we must avoid the potential negative repercussions of bias and discrimination that are delivered by global corporations.

As the Presiding Officer and I were told while we were in Canada, AI is now generating voices that have the potential to undermine singers, artists and actors. There were also stories of AI voice systems being used to scam people into believing that their family member was on the phone requesting money, with one elderly couple losing tens of thousands of pounds. The new legislation to control that was being fiercely challenged by the big information technology and media companies. Therefore, standing up to the IT global giants will not be easy.

What is clear is that the success of the technology must be founded on having the right safeguards in place so that the public can have confidence that it is being used in a safe and responsible manner. I also believe that, as a matter of urgency, we need to look at the base data that AI relies on—specifically, where that data is held and who controls it.

There are incredible possibilities to improve healthcare, which we have heard about. It would improve healthcare immeasurably if we used the data effectively, which we can do right now. I

would want my local pharmacist to have my medical records, but that cannot be decided by individuals; it has to be a health board decision. Perhaps I want to share my health records with Cancer Research UK. I already share data on my sleep apnoea on a real-time basis. I have signed up to that, and I am happy to do it.

I would argue that data should be held by the individual and not by companies or Governments, with access to that data being permitted or denied by the owner on demand.

If it is done properly, AI will improve and accelerate opportunities for industry to deliver scientific breakthroughs. Benefits will be seen across a variety of sectors such as medicine, agriculture, education, healthcare and research.

Scotland has the potential to capitalise on the growth of the sector, and it is already doing so. AI offers a whole range of uses in the agricultural sector. It used to be that “AI” had the definition of artificial insemination, but in this case the new definition is certainly the one we are talking about. It can be used in drones and combined with computer vision for faster assessment of field conditions in order to prioritise integrated pest control. It can be deployed to monitor soil moistures on a continuous basis. It can simplify crop selection and help farmers to identify what produce will be most profitable. Another benefit is that AI can provide farmers with forecasting and analytics to help them to reduce errors and minimise the risk of crop failures. I know that Heriot-Watt University is doing work on that now.

As the minister mentioned, at the National Robotarium in Edinburgh a grain-surfing robot created by Crover is being developed to reduce loss as a result of mould and infestation. It is a unique burrowing robot that will be a real game-changer. In Norway, AI is being used to keep out invasive pink salmon by using facial recognition. Cameras are put in rivers at gates so that the gates open only for Atlantic salmon and thus keep out pink salmon, which are filtered into a different system and put back out to sea.

The University of Aberdeen and Angus Soft Fruits have teamed up to use AI as a means to boost fruit yield and allow growers to more accurately predict soft fruit yields. The system will bring together a range of information, including historical yield and weather data, weather forecasts and satellite imaging. The project partners say that the tool could save Scotland’s soft fruit industry, which produces more than 2,900 tonnes of raspberries and 25,000 tonnes of strawberries annually.

Scotland’s Rural College has also teamed up with NVIDIA to better integrate artificial intelligence into the fight against the bacterial disease bovine

tuberculosis, which costs the country millions of pounds every year. The mid-infrared spectral data can now be analysed at 10 times the previous speed, which means that we can screen more cows.

There is enormous potential for artificial intelligence to improve all our lives. However, there must be incredibly tight and robust policies in place for the good of us all. We need to start now by focusing on how AI is already influencing our personal decision-making processes. That must be the right place to start.

The Presiding Officer: Fiona Hyslop is the final speaker in the open debate.

16:32

Fiona Hyslop (Linlithgow) (SNP): As we have already heard from members, AI is not a new phenomenon, but advances in this technology allow computers to perform tasks that would otherwise require human intelligence. It can absolutely transform lives.

Only last week, we heard of breakthroughs in AI technology using algorithms to help Gert-Jan Oskam, a man who had been paralysed for 10 years, to walk again. That was made possible by a brain-spine interface—a wireless digital link between his brain and spinal cord. It allows Gert not only to walk but to stand up from his wheelchair when speaking with friends, allowing eye-level contact. The value of advances such as this to the lives of individuals is immense.

It is clear that there are advantages to be won from doing AI right, and the Scottish Government’s AI strategy, published in August 2022, shows a commitment from the Government to unlock the potential of AI in Scotland while also building a foundation of trust with people across the country. I think that, when it comes to ethics and trust, Scotland has the reputation and the experience to help to develop needed regulation. However, I am not aware that the Scottish Government currently has AI-specific internal policies and guidelines. How do we make policy and law in a world of AI?

In May, we saw hearings in the US Senate on the safety concerns around the use of AI. Sam Altman, the chief executive of OpenAI, testified before senators, largely agreeing with them on the need to regulate AI technology, which is becoming increasingly powerful. Indeed, along with a dozen other experts, he supported the statement that was published on the web page of the Centre for AI Safety, which read:

“Mitigating the risk of extinction from AI should be a global priority alongside other societal-scale risks such as pandemics and nuclear war”.

However, Mr Altman rejected the idea of a temporary moratorium on AI development beyond GPT-4, which was suggested in an open letter signed by 30,000 leading technologists, ethics experts and civil society activists.

Should he be the judge and the jury? If not, who should be? The questions that we are asking need answers—indeed, they needed answers before we got to this point.

Of course, it is autonomous AI that is the biggest threat. The Centre for AI Safety website suggests a number of possible disaster scenarios: AIs could be weaponised—for example, drug-discovery tools could be used to build chemical weapons; AI-generated misinformation could destabilise society and “undermine collective decision-making”; the power of AI could become increasingly concentrated in fewer and fewer hands, enabling

“regimes to enforce narrow values through pervasive surveillance and oppressive censorship”;

and enfeeblement, whereby humans become dependent on AI

“similar to the scenario portrayed in the film *Wall-E*”.

Just as the world had to establish global nuclear non-proliferation agreements to help to prevent mutually assured world destruction, we need some kind of global AI regulation and control as a matter of urgency if we are to have universal trust and an ethical approach.

That would be for AI players above the wire, who are known and willing to be regulated, but what of those bad actors operating beyond grid, beyond control? Also, what happens when AI sub-contracts tasks—how can that be regulated and have safeguards?

As the use of AI expands, it is imperative that Governments across the globe work with business to ensure that we are also addressing safety concerns by having clear goals and a justification for using AI to achieve them. The use of personal data must be secure, and we have to address ethical issues that may arise, including bias and accuracy. That is probably where Scotland can have some influence.

On bias, when Amazon developed AIs to evaluate CVs, its intention was to find the best candidates. However, because the data that the programme was trained with was primarily CVs from male candidates, the AI was not ranking candidates in a gender-neutral way. How do we ensure that AI is fair in a world that is still unequal?

In terms of reaching net zero, computer scientists at the University of Aberdeen and at Aberdeen-based software company Intelligent

Plant will use AI to develop a decision support system to tackle shortfalls in production and help Scotland to meet the target of 5GW of installed hydrogen production by 2030. They are working in partnership with the European Marine Energy Centre, and the project has been funded by the Scottish Government’s emerging energy technologies fund.

In the business community, Glasgow-based Changingday is using the technology to create immersive VR—virtual reality—experiences to enable autistic people to enjoy a new world of possibilities while helping them to cope with the real world.

It is clear that Scotland is harnessing the power of AI in our education sector, in business and in reaching our climate change targets, and that it can be a force for good. AI has the potential to deliver great things, but can it ever give us joy, passion and feeling?

ABBA has ruled out a 2024 Eurovision reunion in person on the 50th anniversary of its win, as Sweden once again hosts the Eurovision Song contest, but—who knows?—the very successful virtual ABBA Voyage tour performance could be recreated next year, perhaps with avatars and new songs. With AI, would we really know to whom we have to say, “Thank You for the Music”?

AI is inspiring but also threatening at the same time. It is the pace, scale, range and effect that desperately need to come under some kind of global regulation. We have to start somewhere, and we should already have started, but we certainly have to start now.

The Presiding Officer: We move to winding up speeches, and I call Michael Marra.

16:38

Michael Marra (North East Scotland) (Lab): I thank all members for their very thoughtful contributions to the debate. I am sure that there is an awful lot for the minister and the Government to reflect on in the wide range of current examples of application of AI and the impact in history of technological transitions over time.

I think that the word “pervasive” was used by Michelle Thomson in relation to the scale of the challenge. That is something that I strongly agree with.

We welcome the fact that the Government is keen to engage, to review the position that it has taken and to draw from expertise as widely as it can. It is clear from the debate that there are concerns that the scope has perhaps been too narrow in terms of definition, and concerns about how the Government has sought to deal with the

issue in the past. That is not a criticism, because AI is a growing field.

Rightly, a great amount of concern has been expressed in the media—as has been reflected today—arising from the rapid development of AI technologies. We—Parliament and Government—should be animated by the application and understanding of AI.

I want to focus particularly on issues around the education system. Questions about how and what we learn are really key. At the moment, the Parliament and the Government are considering how we will assess students in our education system. We have had an interim report from Louise Hayward that had little to say about the application of artificial intelligence in assessment processes, so I hope that her final report will have more to say in that regard. We have to wonder whether the proposals will stand up to the real imminent test of application of AI.

An interesting exchange took place between Willie Rennie and Martin Whitfield, which contrasted the rapid arms race of plagiarism software against the plagiarists. Martin Whitfield, as he always does, spoke to the intuitive power of the teacher. He is a better teacher than I am—I recall having to mark hundreds of exam scripts as a university tutor; the fact that one is paid by the script probably undermines the scrutiny that one gives to the application and depth of understanding of the individual students. With the whole system, we need to consider how we incentivise and ensure that we can cope with the application of the new and rapidly improving technologies.

I point to an exchange of letters between the Education, Children and Young People Committee, the Cabinet Secretary for Education and Skills and the Scottish Qualifications Authority. The response of the cabinet secretary to concerns around AI as it might be applied in education was slightly less than the committee and, certainly, I hoped for. That was mirrored in the SQA's response, which did not seem to engage fully with the issue with the urgency that members from across the chamber have reflected, and ran counter to the ministerial intention to understand how we might manage the issues in reality.

Michelle Thomson used the word “deontological”, relating the debate to the necessity of understanding, in our approach, the moral underpinning of the choices that we make on the issues. There are practical concerns. We have, in order to understand what we are seeking to achieve, not only to consider whether the consequences might be perverse, but whether they come from base principles. That speaks to common concerns about the rules that govern AI

and to questions around how we can approach concerns collectively and internationally. The idea that we certainly cannot do it alone has come through strongly this afternoon.

The broader concerns are reflected in questions about other areas, such as the shape of the economy. Many members mentioned the question of the kind of economy that we want to produce.

There are real concerns in relation to data as a form of wealth. We all produce data, but who exploits it? The gap between the data rich and the data poor—with the question about who has the ability to exploit that data—can exacerbate and cause ever-greater problems in relation to the shape of our society, so we would do well to think more on those areas.

I have already touched on the issue of technological transitions. We know that we are going through a rapid technological transition in our energy production, so there is a need to drive change in the area, which will have real human consequences for the jobs that people have, the shape of people's lives, and whether they can earn decent livings to support their families.

I want to touch slightly on perhaps less-anticipated applications of AI, such as in the justice system. To illustrate the fact that those systems and processes are in play today, I note that DNA samples that the police collect in Scotland are deconvoluted by completely impenetrable black-box algorithms that are sold by companies, and different algorithms come out with different answers. A real challenge exists around transparency issues—a point that Daniel Johnson and others rightly raised—and the question of how AI actually works in the system.

AI is already used for triaging huge evidence sets, which are increasing as we produce different data streams that become part of the evidence. A significant challenge exists around the issue of disclosure between defence and prosecution and the way in which information is shared. Many of the algorithms are impenetrable; understanding them and having transparency is absolutely key.

I attended and contributed to a seminar at the Royal Society in London on the application of sentencing algorithms, which has happened in the United States. Many judges around the room expressed real concerns about the issue of potential bias in the system. It fell to me in that discussion to point out to the collected judges that the only black people in the room were serving the coffee. There are inherent biases in our systems as they stand, and those are not only reflected in the systems that are produced. We have to understand that we are not contrasting what happens with an ideal world; we have to test artificial intelligence in that regard.

We welcome the debate and thank the minister for securing it. We look forward to further updates from the Government.

16:45

Liz Smith (Mid Scotland and Fife) (Con): I agree with Michael Marra about the quality of the debate. It was interesting that Pauline McNeill, Martin Whitfield and Ivan McKee all said that perhaps it has been good because there was no motion. I agree with that; it is quite pleasant to be away from the party-political ding-dong that goes back and forward all the time. Having no motion raises the tone; this debate has been a classic example of that.

I came to the debate with mixed feelings, and, having listened to every contribution—all have been interesting—my mixed feelings remain.

All the technological advances throughout history—in his opening speech, the minister mentioned the steam engine, and we have had mention of the telephone, the television and the computer—have come with a vast array of benefits. That is also true for AI. Fiona Hyslop made a poignant point when she mentioned the case in Switzerland in which, it was reported last week, a digital AI bridge has been used to decode the brain signals of a paraplegic person who can now walk again. There are so many benefits from AI in medical science, and it has transformational potential in patient care, as well as in the digital, gaming, space, diagnostics and—as Finlay Carson said—agriculture and fishing industries.

Michelle Thomson made the excellent point that, at the Finance and Public Administration Committee on Tuesday, when we took evidence on public sector reform, it was noted that AI has huge potential for such reform. That is much needed—not just now but for the foreseeable future—if we are to address the huge black hole between public expenditure and tax revenues. Therefore, we must be careful about resistance to AI.

I want to reference the editorial in last Saturday's *Financial Times* because it raised an important principle. The *FT* editor herself wrote that “nothing matters ... more” to her

“than the trust of readers in the quality”

of “journalism”—for “quality”, read “accuracy”, “fairness” and “transparency”—which is a refreshing thought from a senior editor. She said that generative AI is developing at “breakneck speed” with profound implications for journalism—both good and bad. She ends by saying that

“FT journalism in the new AI age will continue to be reported and written by humans who are the best in their fields and who are dedicated to ... analysing the world as it is, accurately and fairly.”

That is an interesting comment. She is making the point that the leap towards artificial intelligence is that bit more challenging because we simply do not understand it, as Willie Rennie rightly pointed out in his speech.

Pam Gosal said that we have to be mindful that there will be trepidation about the possible consequences that AI could bring if it is utilised by criminal or terrorist organisations, which I am sure is a concern for many members.

As with all technological leaps, there is no going back. Once Pandora's box has been opened, or the genie let out of its bottle, the immense opportunities that exist have to be taken, but we must be mindful that there will be an uncontrolled spiral of competition that leaves only two options: adapt or be left behind.

They say that you cannot halt progress, whether that is the growth of the internet and the subsequent decline of in-person services and retail, the smart phone that has become an essential technological companion to us all over the past 10 years, or even—we are told that this is progress—the removal of phones from our desks here in Parliament in favour of Webex software, which is more challenging to me than AI chatbots. Technological developments always cause irreversible change; it is how we harness the change that really matters.

A very similar case to the growth of AI was the advent of streaming platforms for music at the turn of the century. That not only totally revolutionised the entire industry and how artists could generate income, but caused numerous legal challenges and ethical issues. We have, in the debate, spoken a lot about ethical issues, with members highlighting just what it means in the case of AI.

I mentioned at the start of my speech that I have mixed feelings, which is because, as Michael Marra has, I have been thinking a lot about how AI will affect education. During my teaching career, I was always very interested in how we use knowledge—not just in the knowledge itself. Education should always be about developing inquiring minds and building resilience, but if something does the thinking for the student or the teacher, it will undermine and potentially remove the process of inquiry, and there is a danger that it will make them lazy.

I cannot deny that I would have liked the idea of an AI chatbot when I was at school, perhaps to help with a troublesome essay, a differential calculus solution or whatever, but I do not think that it will be long before problems occur, especially as AI has sometimes been found to fail.

Michelle Thomson: Will the member take an intervention?

Liz Smith: Do I have time to do so, Presiding Officer?

The Presiding Officer: You have seven minutes, Ms Smith.

Michelle Thomson: I will be very quick. I absolutely agree with what Liz Smith is saying, but I would perhaps go even further and say that I fear that the processes that one goes through in education in order to be able to apply judgment in decision making would be lost because, as she pointed out, that process is about much more than knowledge. Does she agree?

Liz Smith: I agree very much. That was a very good point. If something does the thinking for us, there is a real danger that that will take away a lot of the judgment process that we have been used to. That would be a whole different ball game, especially in education. I fully understand the concerns of colleges and universities about the implications of that, which Pam Gosal mentioned in her speech. Michelle Thomson has made a valid point.

I want to finish on the question of ethics, which is an incredibly important aspect of all our considerations. We need to have control of AI. That will be extremely difficult, because we do not understand the journey on which we are embarking. Not only must there be proper legislative regulation; it is absolute necessary that Government and private companies continue to adhere to ethical standards and to uphold trust. I very much welcome what the minister said about taking a four-nations approach, because I do not think that we will get anywhere if we do not take such an approach.

AI is a very interesting area. We absolutely have to take it seriously, because it is the new world. We must get to grips with it, but we will be significantly challenged.

The Presiding Officer: I call Richard Lochhead to wind up the debate.

16:52

Richard Lochhead: I thank members across the chamber for their thoughtful and often fascinating contributions to a debate on a subject that will affect the future of our country and our planet—AI will be utterly transformational. I listened carefully to the many views that were expressed. As Michael Marra said, there is a lot for the Government and me, in particular, to reflect on, given the number of good points that were made. We will certainly do that in the days and months ahead.

I was pleased that Daniel Johnson admitted to using ChatGPT to help him to frame his speech, which we all thought was unexpectedly good; it

was good of him to explain why that was the case. I am jesting, of course, because it is a consensual debate.

If we drive by a lawn that has a robotic mower on it, we think to ourselves, “That’s amazing,” and we drive by. If we pick up the newspaper and read about a driverless bus on the Forth road bridge, we think to ourselves, “That’s amazing,” and then we turn over the page and move on, but ChatGPT has sparked a global debate—everyone is speaking about it.

What is the reason for that? In my opinion, the reason is that it is accessible. Millions of people can access the technology. In addition, as a species—as human beings—we are reflecting on what it means for us because it speaks to us and communicates with us as a human being would do.

It is quite incredible and also quite ironic that, while we are debating potential scenarios facing the planet and our societies in the decades ahead, and although we accept that ChatGPT and other forms of AI will not replace humans and has not exceeded human capability, in one sense, it has got one up on us, because we are all thinking, “We’re not quite sure how to respond to AI.”

Willie Rennie made a very important point when he said that, as politicians and as Parliaments, we must show humility. He is right. We must also act thoughtfully and continue to debate and to listen, both in and outwith the chamber. The Government has an essential role to play—that of representing the interests of all our people—but we do not have the answers, and that has been reflected in many of today’s contributions.

Martin Whitfield: Is it not the fact that AI is the automation of decision making that we find so challenging? It speaks to something that many members have already commented on, which is the lack of transparency about how, and on what basis, decisions are made. That can be an innately fearful thing.

Richard Lochhead: Yes, which takes us on to the debate about whether AI is trustworthy or can be ethical. Michelle Thomson and others mentioned Scotland’s Futures Forum’s recently published toolkit for looking at the issues. I thought that that was very valuable, as it got me thinking and flagged up issues that the Government and the public sector should think about regarding how to operate AI and use it effectively.

What we are experiencing just now, in Parliament and across the world, is a balance of excitement and fear. On the one hand, we are excited because we can see the potential for AI to improve our world, our quality of life and the Scottish economy and can see how the knowledge revolution can be used to improve education. We

also have fears, because we can see threats and risks. We use the word “singularity” to mean the point at which a machine begins to think for itself and does not need human intervention, because it can develop its own intelligence. That is something that the human species will have to think deeply about.

There will be an impact on jobs, because AI can create jobs but also remove them. There will also be an impact on security and cybersecurity as countries, and bad actors, gain access to AI and can use it for nefarious purposes. We know that that is a deadly serious issue. Some members mentioned the arms race across the world to see who can get to the new technologies and use them first. We do not want the wrong people to get there first, because of the possible ramifications.

Finlay Carson: I touched previously on the point that data is the essential fuel that drives AI, which does not function without data. Does the minister believe that the Scottish Government’s current data policies are fit for purpose for the future and can maximise the advantages that AI brings? The Government is looking to develop a £92 million rural payments system. Does AI form part of the decision making about that?

Richard Lochhead: We must think about how we manage and access data in this country. We are debating this subject today because we are not quite sure what the future is, so it is difficult to answer that question. We must constantly evolve and adapt as we learn about the consequences and potential of AI. That is really important.

Willie Rennie mentioned the importance of politicians and Parliament having good advice, which is why I am pleased that we have the Scottish AI Alliance, chaired by the very talented Catriona Campbell. She is an expert in human-computer interaction and a successful entrepreneur, and she has a number of incredible jobs not only in Scotland but elsewhere in the UK. She is the new chair of the Scottish AI Alliance and, as I said in my opening remarks, we are asking the Alliance to review where Scotland is with AI and to look at the potential for our economy as well as at how we can manage and deal with the risks of AI.

I must give a wee plug for the book “AI by Design: A Plan for Living with Artificial Intelligence”, which Catriona Campbell published last year. I saw her yesterday at the Data Lab in Edinburgh. A Scot has written that book and it is worth a read. I did my best to get through it last night after she gave me a copy in preparation for this debate. The book goes through the various challenges and opportunities facing Scotland and looks at the wider debate across the globe.

The question of jobs has been a key feature of the debate. Clare Adamson and others spoke about how people were fearful of losing their jobs during the industrial revolution and of how old jobs were lost and new ones created. That is the story of history. The Luddites, who worried about the impact of textile machinery on their livelihoods, were mentioned. We must make sure that people are equipped for AI in their current jobs where that is possible and we must ensure that we, as a country, have the skills to create new AI jobs and new employment opportunities.

Michael Marra: The minister makes a good point about being prepared, but part of the job of Government is to make sure that we have the required skills. We have raised time and again the declining numbers of young people who are taking STEM subjects in secondary school. Reversing that trend must surely be an absolute priority for the Scottish Government if we are to be able to cope with the situation.

Richard Lochhead: Again, that is an important point, and it is something that the Government and Skills Development Scotland are addressing. In that context, I want to mention Ivan McKee, who said that computing science is a concern of his, as it is for other members in the chamber. Our chief entrepreneur, Mark Logan, mentioned in a recent meeting that he wants to see more support for computing science teachers so that we can meet the needs of the future Scottish economy. We have shortages at the moment. That is important and we have to look at it more seriously. I am up for that, as are my colleagues in the Government, and people in the computing science profession are working together to try to address that in our schools at the same time.

On the subject of Ivan McKee, I want to pay tribute to him. We have many of the building blocks in place in Scotland to make sure that, as a nation, we are ahead of the game. We are one of the leaders in the world in exploiting AI for the benefit of society, jobs and economic growth in our country. Ivan McKee is not responsible for all the building blocks that are in place, but he has played a role over the past few years and I pay tribute to him for that.

Yesterday, I was at the Data Lab, which is based at the Bayes centre here in Edinburgh. I know that Brian Hills, its chief executive officer, is in the public gallery today. Even though I had been before, I was amazed—again—by everything that I learned is happening on our doorstep, not just in Edinburgh but in other cities and communities across the country, with the research and the developments that are taking place. We should be proud that we are certainly in the lead in making the most of AI to improve our society.

I do not have much time left, but I want to mention the fact that AI has the potential to transform our lives. It is already doing that, but it will do so much more in the future, transforming our economy and delivering enormous benefits. I will give a couple of examples of what is happening in the NHS. First, NHS Greater Glasgow and Clyde's osteoporosis treatment identification using machine learning—OPTIMAL—project is investigating the use of AI to detect osteoporosis early. Secondly, at the start of May, the Beatson west of Scotland cancer centre started using an AI-enhanced linear accelerator to conduct better-targeted, personalised and adaptive radiotherapy.

There are many other examples of work happening in hospitals that is using AI to detect cancer and treat it early in all kinds of ways.

The Presiding Officer: You must conclude, minister.

Richard Lochhead: It is incredible. It is amazing.

AI has a lot of potential to improve our lives and support our economy through economic growth, but it is really important that we get the ethics right, ensure that it is trustworthy and manage it as a Parliament and as a country. We must ensure that we make the right decisions and work on the global stage with the UK Government, our colleagues in Europe and the international institutions to get this right in the interests of humanity.

The Presiding Officer: Thank you. That concludes the debate on trustworthy, ethical and inclusive artificial intelligence: seizing opportunities for Scotland's people and businesses.

Decision Time

17:03

The Presiding Officer (Alison Johnstone): There are no questions to be put as a result of today's business.

Meeting closed at 17:03.

Correction

Graeme Dey has identified an error in his contribution and provided the following correction.

The Minister for Higher and Further Education; and Minister for Veterans (Graeme Dey):

At col 48, paragraph 3—

Original text—

"I point out that YMCA Scotland has supported a programme with CodeClan to address the recruitment, retention and progression of women in STEM."

Corrected text—

"I point out that YWCA Scotland (the Young Women's Movement) has supported a programme with CodeClan to address the recruitment, retention and progression of women in STEM"

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