Consumer Scotland
Luchd-Cleachdaidh Alba

Response to the Draft Energy Strategy and Just Transition Plan

About us

1. Consumer Scotland is the statutory body for consumers in Scotland. Established by the Consumer Scotland Act 2020, we are accountable to the Scottish Parliament.

2. The Act provides a definition of consumers which includes individual consumers and small businesses that purchase, use, or receive products or services.[1]

3. Our purpose is to improve outcomes for current and future consumers and our strategic objectives are:

    - to enhance understanding and awareness of consumer issues by strengthening the evidence base
    - to serve the needs and aspirations of current and future consumers by inspiring and influencing the public, private, and third sectors
    - to enable the active participation of consumers in a fairer economy by improving access to information and support

4. A key component of our general function of providing consumer advocacy and advice is promoting the sustainable consumption of natural resources, and other sustainable practices by consumers. This includes conducting advocacy on net zero, climate change, and adaptation.

Summary

5. For a just transition to be realised, consumers need to be empowered to change how they interact with the energy system. Policy which supports behaviour change and the uptake of low carbon technologies, pursued alongside the increasing digitalisation of the energy system, will be vital to ensuring that the energy needs of consumers are met in a way that is clean, secure, affordable, and fair.

6. The draft Energy Strategy and Just Transition Plan presents an ambitious vision of a net zero Scotland, but would benefit from more detail on how this will be delivered and a greater understanding of distributional costs and benefits for consumers over time.

Further detail of how the ambition and actions set out in the draft Strategy and Plan interact with the wider energy system in Great Britain is also vital, to provide confidence that the Scottish Government's plans are economically efficient, maximise the benefits, and minimise the risks of the transition for consumers in Scotland.

7. We believe that there are a number of things needed to support consumers in Scotland engage with the energy transition in a manner conducive to realising the Scottish Government's overarching vision. These include:

    - A consistent approach to net zero across a range of policy areas to increase the likelihood of consumers adopting relevant measures and behaviour change
    - Access to public messaging and advice that is as simple and straightforward as possible, specific to the individual circumstances of consumers, and consistent and joined up across all sectors, to support sustainable consumption and to protect consumers from misinformation and mis-selling

8. Small businesses must also be adequately supported to participate in and help drive the transition, and attention must be given to the challenges faced by SMEs – especially those who are tenants or who are financially vulnerable.

9. Consumer Scotland would also welcome more detailed information in the final draft of the Energy Strategy and Just Transition Plan around the finance and logistics of developing the skilled workforce required to support consumers on a straightforward, positive energy transition – from enquiry through to installation and maintenance.

10. In an interconnected energy system in which heat, transport, and power are all increasingly reliant on intermittent renewable electricity generation, understanding cross-sector interdependencies will become ever more important to the timely and cost efficient delivery and operation of an energy system for net zero. A whole system and data-led approach to policy and planning is vital to ensuring that these interdependencies and trade-offs, and their implications consumers, are properly accounted for.

11. Engagement with communities and stakeholders should also be facilitated across Scotland, especially in regions likely to be most affected by the net zero transition – for example, through shifts in the job market and employment opportunities, or the impact

of physical infrastructure on communities. This will help to limit detriment to consumers, create realistic expectations about impacts, and foster greater demand-side buy-in at the community level.

Chapter one – Introduction and Vision

Q1. What are your views on the vision set out for 2030 and 2045? Are there any changes you think should be made?

12. Consumer Scotland supports the vision "that by 2045 Scotland will have a flourishing, climate friendly energy system that delivers affordable, resilient, and clean energy supplies for Scotland's households, communities, and businesses". We would however welcome additional information in a range of areas affecting consumers in the final draft of the Energy Strategy and Just Transition Plan.

13. Changing consumer behaviour will be vital to enable the timely and cost effective delivery of the Scottish Government's ambitions and targets. For example, Scotland's homes, businesses, and communities will need to use less energy and water than they do today, and use different sources of energy for heating and transportation. Consumer participation in other carbon intensive activities is also likely to need to reduce. It is therefore essential that delivery plans are shaped around the way consumers will interact with them.

14. The role of consumers is pivotal to sustainable economic growth and can be a force for economic transformation in the right conditions.

15. Healthy and sustainable markets require consumer demand, the availability of suitable goods or services, and consumer trust in these goods and services. Realising this requires consumers to be put at the heart of policy decisions, so that consumers can access information and feel empowered to make more sustainable purchasing and consumption decisions. It will also be important to consider how to target additional support towards those who will most need help to make the transition. The final draft of the Energy Strategy and Just Transition Plan could provide more detail on how this might be achieved.

16. In order to provide consumers across Scotland with the support that they require in the transition to net zero, the Energy Strategy and Just Transition Plan needs to start from a consumer perspective. Access to trusted, wrap-around advice and information on a range of issues including energy, home improvements, water use and efficiency, food, and transport will help consumers to make the wide-ranging and necessary changes required to their homes, daily routines, and business practices. This requires a consistent approach to net zero across a range of policy areas to increase the likelihood of success in consumers adopting relevant measures.

Chapter two – Preparing for a Just Energy Transition

Q2. What more can be done to deliver benefits from the transition to net zero for households and businesses across Scotland?

Supporting Consumers to achieve a Just Transition

17. Supporting consumers across Scotland to make the transition to net zero will require improved communication to facilitate a better understanding of the changes they can make, and what the impact of those changes might be. Consumers need to be able to access advice that is specific to their individual circumstances to support them to consume in a more sustainable way, reduce personal emissions, and make sustainable and informed decisions across a range of sectors.

18. For the benefits of the transition to net zero to flow to all households and businesses in Scotland, all consumers will require at least some degree of support. This requires significant leadership and co-ordination. A key factor will be enabling access to the right support, at the right time, for consumers as they move through this transition.

19. Evidence suggests that consumers are supportive of climate change targets, but remain unclear about what their role in achieving them is. The proportion of adults in Scotland viewing climate change as an immediate and urgent problem rose from 80% in 2020 to 83% in 2021.[2] The House of Lords Environment and Climate Change Committee also recently concluded that there was evidence that consumers are concerned about climate change and that there is a widespread desire for action to be taken. However, the Committee noted that many consumers do not know what the most effective actions are to reduce our emissions and environmental impacts, or appreciate the scale

of change that will be needed to reach net zero or adapt to climate change.[3] Even where people can identify the most impactful actions, available data tends to show that these are the not the actions they are most often taking.[4]

20. Further to this, the Energy Consumers Commission conducted research examining consumer engagement with decarbonisation in Scotland,[5] finding that:

    - Concern about climate change is high, but consumers lack understanding about the energy system and the scale of the decarbonisation challenge
    - There is insufficient consumer information and knowledge about what actions to take – particularly on low carbon heating – and there is little evidence of consumers making more impactful changes such as adoption of electric vehicles and heat pumps
    - Decarbonisation is often seen as difficult and expensive. Where solutions to issues are not readily apparent, this may reduce consumer interest in making changes
    - While perceptions of upfront cost are frequently cited as a barrier, this is not the only concern for consumers: other challenges include perceived issues with compatibility, reliability, aesthetics, noise, and inconvenience
    - In Scotland, early adoption of some solutions has led to negative legacy issues, reducing trust in decarbonisation technologies and energy suppliers which can negatively affect consumers' enthusiasm for further engagement

21. Consumer Scotland welcomes the commitment to publish a Public Engagement Strategy for the Heat in Buildings programme in 2023, but we consider that a wider programme of public engagement, covering all aspects of the transition and spanning multiple years, may also be beneficial. Similarly, Consumer Scotland welcomes the commitment to establish a dedicated national public energy agency, *Heat and Energy Efficiency Scotland*, to provide access to support to change how people use energy in their homes across Scotland, by 2025. However, there remains a pressing need to adequately support consumers on their net zero journey across a range of other sectors. Advice and public messaging across sectors should be as consistent, joined up, and as simple as possible.

22. Small businesses also need appropriate support. Attention should be given to the challenges faced by SMEs, especially those who are tenants or who are financially vulnerable.

Protecting consumers from detriment during the transition

23. The UK Government has conducted various studies examining consumer detriment, including the Consumer Protection Study 2022 which asked respondents to consider their experiences of consumer detriment during the 12 months prior to April 2021. This study found that 72% of consumers in Scotland had experienced detriment.[6] Overall, detriment among consumers in Scotland was more commonly experienced in relation to services (60%) than goods (46%).[7] Looking at relevant sectors, detriment was reported by 15% of consumers purchasing electricity and gas services and 11% of consumers purchasing home and garden maintenance and repair services.

24. Protecting consumers from experiencing detriment, or reducing their risk of experiencing it, is important in all consumer markets and will be vital during the journey to net zero. It is essential that there are appropriate and robust redress measures in place to protect consumers where work goes wrong as a result of factors including a lack of joined up services, rogue traders, or mis-selling. The experience of many consumers in Scotland of the UK Government's Green Deal scheme highlights the scale of consumer detriment that can arise.[8]

25. To protect consumers from misinformation and mis-selling when adopting low carbon technologies, it is essential that they are able to access appropriate, clear, and trustworthy information in an accessible format that is meaningful to their individual circumstances. This information should also come from well trusted sources in order to maximise impact. Studies show that the most trusted sources are scientists, NGOs, and charities and media outlets.[9]

26. Protecting consumers can improve the operation of markets, as consumers who are confident that they have some protection may be more willing to engage in markets. For example, the Heat Trust notes that consumer protection is essential to the long-term success of heat networks.[10] An increased level of consumer trust in businesses, markets, and governments is likely to result in consumers feeling more confident in spending money on goods and services, contributing to overall levels of economic growth[11] and towards the transition to net zero.

27. Regulatory frameworks must be able to keep pace with emerging markets. We therefore welcome the commitment to establish a new regulatory regime for heat networks in

Scotland, but we would note that it is important that systems are designed in a way that allows them to be flexible enough to deal with future changes.

Ensuring everyone can participate in the transition

28. As Scotland transitions to net zero, and as new technologies are invested in along the way, the manner in which many services are delivered will need to be redesigned. This presents an opportunity to place consumers – including those in vulnerable circumstances – at the heart of the process. Doing so will support everyone to participate in the transition effectively, and allow all consumers to make the best choices for their own individual circumstances.

29. There are a number of key areas where consumers could find themselves in vulnerable circumstances as part of the transition to net zero. To avoid consumer detriment, the Scottish Government should aim to ensure the provision of appropriate and timely advice and support, for all who may need it.

30. A key moment in the transition to net zero for the c. 73% of domestic households in Scotland reliant on the combustion of fossil fuels for heating will be the adoption of zero emissions heating.[12] Supporting consumers to move away from these high-emitting fuels will be a crucial part of any net zero strategy but will also be a difficult change to implement without suitable advice and financial support, a sufficiently mature supply chain, and wider energy market reform. Similarly, consumers in the lowest income households may be more vulnerable to financial detriment and further inequality based on the estimated costs of adaptations required for homes to achieve net zero.[13] Targeted financial support may be necessary to help consumers to meet the Scottish Government's targets, and to reduce the potential for detriment.[14] Further information in relation to consumers in vulnerable circumstances in rural areas can be found in our response to question 32.

Q3. How can we ensure our approach to supporting community energy is inclusive and that the benefits flow to communities across Scotland?

31. Consumer Scotland welcomes the Scottish Government's support for community energy and we recognise the success of the Community and Renewable Energy Scheme (CARES) in building community wealth. We note however that as the energy transition in Great Britain progresses, there will be opportunities for consumers and communities to realise

value from the transition in ways which extend beyond traditional models of renewable energy generation asset ownership by communities of place. For example, Ripple Energy allows communities of interest to share in the ownership of onshore wind and solar PV, with investors rewarded with a discount on their energy bills that is directly related to the productivity of the asset(s) in which they hold an interest.[15]

32. In an energy system increasingly reliant on intermittent renewables, the growing need to balance demand with available supply and local network capacity holds significant potential to unlock value for consumers through distributed demand flexibility and the development of smart local energy systems.[16] Recent innovation projects, such as Project LEO in Oxfordshire[17] and Project CommUNITY[18] and the Urban Energy Club in Brixton,[19] also demonstrate the potential for communities of place to work together in new ways, realising both individual and collective value from the energy transition by accelerating the deployment of renewables on the electricity system and reimagining community benefits through initiatives such as peer-to-peer trading. Local area energy planning[20] could help identify such opportunities and provide a meaningful chance for consumers to engage with and help shape the energy transition at a local level. Further information on smart local energy systems and local area energy planning can be found in our response to questions 27, 41, and 42.

33. Consumer Scotland would welcome a clear articulation of what the Scottish Government considers the potential of community benefits to be in an energy system for net zero, and the actions it will take to ensure that communities throughout Scotland are able to participate in and derive value from the delivery of a just transition. This will not only help manage expectations, but also create enthusiasm for different models of community energy based on the potential value it can bring.

34. To support the gathering of a wide range of views, it may be helpful for the Scottish Government to encourage co-design by utilising procedures and resources such as those created by Local Energy Scotland,[21] and facilitating local stakeholder events where interest has been expressed. This could also help potentially interested parties understand the opportunities community energy may bring and the support available in terms of financing, planning, and legal insights. Such work could also increase stakeholder awareness of the potential for community energy in their areas and help break down the large amounts of information and technical language to improve understanding of the plan.

35. Engagement with communities and stakeholders should take place across Scotland, and especially in regions likely to be most affected by the net zero transition – for example, through shifts in the job market and employment opportunities, or the impact of physical infrastructure on communities. This will help to limit detriment to consumers, create realistic expectations about the impact of the transition to net zero, and foster greater demand-side buy-in at the community level.

Ensuring there is a skilled workforce to support the transition

Q7. What more can be done to support the development of sustainable, high quality and local jobs opportunities across the breadth of Scotland as part of the energy transition?

36. The Climate Change Committee highlights the need to properly quantify the skills requirements for decarbonising our building stock, and to ensure that delivery can be monitored. The Committee also stresses the importance of ensuring that the required education and skills provisions commence, and that funding and policies are in place for provision to scale up at the required pace.[22]

37. The current Climate Skills Action Plan (CSAP) notes the need for development of specialist knowledge and skills in retrofit, zero emissions heating systems, and heat networks for professional, technical, and craft roles, as well as data and smart systems skills for delivering energy management in buildings services. It further notes that the sector faces labour shortages with an estimated need for 79,100 construction workers by 2029.[23]

38. Consumer Scotland welcomes the £875 million investment in Green Jobs, skills and energy transition and notes that the Climate Emergency Skills Action Plan is due for update this year. We would welcome more detailed information around the finance and logistics of developing the skilled workforce required to support consumers on a straightforward, positive energy transition – from enquiry through to installation and maintenance. Estimates of the numbers of jobs to be created vary significantly and we would also welcome more detail in the final draft of the Energy Strategy and Just Transition Plan on the potential job market impacts in sectors beyond energy production.

Chapter three – Energy Supply

Ambition and targets

39. Consumer Scotland recognises that deployment ambitions and targets can be helpful for sector-level investor confidence. However, it unlikely to be in the consumer interest for delivery to be entirely dictated by those ambitions or targets. Rather, technology-specific deployment ambitions and targets should serve as an evidence-led and system-wide best estimate as to the likely scale and timing of future whole system need. Appropriate market design and routes to market, and a suitably supportive planning framework, should then enable the adoption of a technology- and locationally-neutral approach to the delivery of that need. This allows markets to bring forward different solutions to the challenge of delivering system-wide change, encouraging innovation, and driving down whole system costs, while maximising the benefits of the transition for consumers, maintaining security of supply, and appropriately valuing the unique system properties that each technology offers. In contrast, delivering to government-set, technology-specific, sub-national deployment targets is likely to come at a net cost to consumers, and deliver sub-optimal consumer outcomes.

Solar PV

Q13. Do you agree the Scottish Government should set an ambition for solar deployment in Scotland? If so, what form should the ambition take, and what level should it be set at? Please explain your views.

40. The UK Government has set an ambition for the deployment of 70 GW of solar PV capacity in Great Britain by 2035,[24] as part of its efforts to deliver a decarbonised electricity system by the middle of the next decade, subject to security of supply.[25] As an integral part of the electricity system of Great Britain, it is reasonable to assume that Scotland will have a role to play in meeting this target: National Grid ESO's latest Future Energy Scenarios suggest that 3-8 GW of solar PV capacity may be required in Scotland by 2050, with the 1-2 GW modelled by 2030 indicating that a 4.5-fold increase in Scottish solar PV deployment may be necessary over the next 6.5 years.[26,27]

41. Diversity of supply is crucial to the delivery of net zero, enhancing energy security and reducing the cost of the energy transition to consumers. In addition to complementing onshore and offshore wind due to its unique generation profile, solar PV holds an

important role in delivering a just transition to net zero, in that it is more easily scalable to domestic levels than any other renewable electricity generation technology. This brings with it an opportunity to deliver on the Scottish Government's vision for a just transition, where the energy system is increasingly democratised and consumers are fairly rewarded for behaviour change that contributes to the efficient operation of the whole energy system.

42. The solar PV market in Scotland is different to that in England and Wales as domestic and commercial rooftop installations comprise a much higher proportion (c. 50%) of total installed capacity.[28,29,30] However, recent changes to building regulations mean that housing developers in Scotland are now given the opportunity to specify *either* solar-PV *or* a zero emissions heating system to meet required standards. Despite the Scottish Government's welcome focus on increasing the thermal efficiency of a building's fabric, this means that the occupants of new build properties in Scotland that are fitted with a heat pump are more likely to be required to purchase all of their electricity demand from the grid, whereas the occupants of an otherwise identical suitable new build property fitted with a fossil fuel boiler are able to offset a significant proportion of their (much lower) electricity demand through self-consumption. This ultimately places a higher demand on the electricity system than is necessary, increasing bills for all consumers.

43. If left unaddressed, this problem will be exacerbated when the proposed New Build Heat Standard is introduced in 2024 as developers will have the opportunity to cease all investment in domestic rooftop solar-PV. We would therefore recommend that the final draft of the Energy Strategy and Just Transition Plan includes a much stronger signal of support to the solar PV industry in Scotland, consistent with the support shown in the draft Strategy and Plan for other, mature renewable energy generation technologies. We would also recommend that the Scottish Government reviews the notional house specifications ahead of the adoption of the New Build Heat Standard, to encourage developers to continue investing in domestic rooftop solar technologies alongside zero direct emissions heating systems, wherever practical.

Hydrogen

Q15. Our ambition for at least 5GW of hydrogen production by 2030 and 25GW by 2045 in Scotland demonstrates the potential for this market. Given the rapid evolution of this sector, what steps should be taken to maximise delivery of this ambition?

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Q16. What further government action is needed to drive the pace of renewable hydrogen development in Scotland?

44. The likelihood of domestic consumers and the majority of small businesses using hydrogen for heating is increasingly being called into question.[31] The combustion of hydrogen in the presence of air has long been known to produce greater quantities of NO_x emissions than is the case with the combustion of methane due to its higher adiabatic flame temperature,[32] while recent research has also highlighted that the widespread use of hydrogen could present an elevated risk of adverse climate impacts due its action as an indirect greenhouse gas.[33,34] NO_x emissions are also a known contributor to poor air quality and are a precursor to the formation of low level ozone,[35] while exposure to elevated levels of NO_x can lead to respiratory ill health and sensitivity to other allergens.[36]

45. The Scottish Government's Hydrogen Action Plan[37] restates an ambition for the deployment of at least 5 GW of hydrogen production capacity in Scotland by 2030, with an ambition for 25 GW of renewable and low carbon hydrogen production capacity deployed by 2045. This level of ambition to 2030 represents 50% of the UK Government's 2030 hydrogen target[38] and would mean that the vast majority of electrolytic hydrogen production capacity in the UK to 2030 would be located in Scotland. While this undoubtedly represents an opportunity for Scotland to become a leader in electrolytic hydrogen, interdependencies between the water and hydrogen sectors in Scotland in the context of a changing climate and population change are yet to be fully understood.[39]

46. Multiple global studies indicate that electrolytic hydrogen is likely to be more expensive than alternative sources of low carbon hydrogen.[40] Under current wholesale electricity market arrangements, UK Government modelling also suggests there will be a significant cost premium for electrolytic hydrogen production in the UK in 2030, which then diminishes over the following 20 years.[41] Early deployment of electrolytic hydrogen at scale is therefore likely to depend on significant subsidy to support cost competitiveness with fossil fuels and provide a sufficiently strong price signal to encourage the growth of the hydrogen economy; longer-term cost competitiveness may rely at least in part on the outcome of the UK Government's Review of Electricity Market Arrangements (REMA).

47. National Grid ESO's Future Energy Scenarios indicate that 28-45 GW of electrolytic hydrogen capacity may be required in Great Britain to meet indigenous demand by 2050, of which 3-17 GW may be located in Scotland.[42] The Scottish Government's 2045 ambitions would therefore appear to sit at the upper end of these projections. However, we note that the UK Government's analysis of the hydrogen pipeline has to date only identified 20 GW of hydrogen potential in the UK by 2037.[43] Modelling undertaken by the UK Government and National Grid ESO also suggests that indigenous hydrogen demand may be no more than 38 TWh per annum by 2030,[44,45] with indigenous demand increasing to between 114 TWh and 431 TWh per annum by 2050.[46]

48. Such variability in both modelled capacity and demand hints at significant uncertainty in future load factors for electrolytic hydrogen production assets. As other sectors begin to electrify at pace over the coming decade, reliance on curtailed wind for the production of electrolytic hydrogen in Scotland may be a further contributor to low and unreliable load factors. Under current wholesale electricity market arrangements, this could significantly increase the Levelised Cost of Hydrogen,[47] adding further to end user costs or the level of financial subsidy required to ensure cost competitiveness with fossil fuels.

49. We note the Scottish Government's continued support for hydrogen blending. We are unconvinced that this would be consistent with securing the short- or long-term interests of domestic or small business consumers in Scotland. For example, recent analysis has found that hydrogen blending would come at significant cost to consumers in Great Britain, with end user costs per kWh of energy delivered increasing by between 8% and 20%, depending on the source of hydrogen production.[48] It may therefore be prudent for the Scottish Government focus on supporting the developing hydrogen sector in Scotland to decarbonise existing sources of hydrogen demand, and supporting the growth of markets for hydrogen derivatives, within the limits of devolved competence.

50. We also note the Scottish Government's call for the decision on the role of hydrogen in the decarbonisation of heat to be accelerated by the UK Government. However, this decision is reliant on data from demonstration projects including H100 Fife[49] and the Hydrogen Village trial,[50] which is not expected to be available until 2026. In any event, modelling by the UK Government and National Grid ESO indicates that hydrogen is unlikely to play a significant role in the decarbonisation of heat in Great Britain until the 2030s under any scenario.[51,52] The accelerated heat decarbonisation timeframes to which the Scottish Government is already committed, and the availability of viable

alternatives to hydrogen for heating – including for a significant proportion of process heat[53] – indicate that it is likely that more established technologies, such as heat networks and solutions powered by electricity, will play a significant role in the decarbonisation of heat in Scotland.

51. The Hydrogen Action Plan[54] suggests that that hydrogen will play – at most – only a marginal role in decarbonising heat in Scotland. The Scottish Government should therefore consider how it will work with Ofgem and the UK Government to ensure that the gas grid in Scotland is repurposed and reprofiled for a future role in conveying hydrogen and other gasses necessary to support the decarbonisation of 'hard to abate' sectors. This includes planning for redundant assets to be appropriately decommissioned, and ensuring that the cost of this work is efficient and recovered fairly from consumers – particularly if the pathways to heat decarbonisation in England and Wales differ significantly from that proposed for Scotland.

Bioenergy

Q17. Do you think there are any actions required from Scottish Government to support or steer the appropriate development of bioenergy?

Q18. What are the key areas for consideration that the Scottish Government should take into account in the development of a Bioenergy Action Plan?

52. We agree that bioenergy production and use in Scotland is likely to play a niche but important role in the transition to net zero. However, we believe that role is likely to extend beyond negative emissions technologies – both in economic and environmental terms. For example, the use of biodiesel may provide a cost effective short- or long-term route to ensuring security of supply for communities that are currently reliant on fossil diesel for backup power, due to the ongoing need for reliable access to a fuel source that can be transported in bulk and stored securely at low cost for extended periods, and the consumer benefits of rapid ramp rates and startup times for backup power.

53. Underlining the increasingly interconnected nature of the energy system, it is likely that the use of bioenergy solutions will often need to be supported through multiple local markets to stimulate sufficient levels demand to enable economies of scale to deliver value to consumers. In the above example, this might include the localised use of biodiesel in agricultural machinery in some rural and island communities, whereas for

bioenergy carbon capture and storage ("power BECCS") this is likely to include the use of waste heat from the combustion process to undertake other, economically valuable work. Local area energy planning[55] and a regional whole system energy plan for Scotland[56] could help to identify such cross-sector interdependencies, de-risking both public and private investment in low carbon infrastructure and providing meaningful opportunities for consumers to engage with and help shape the energy transition at a local level.

54. We suggest that the Scottish Government undertakes further work to understand the potential role of biofuels as a transition fuel for consumers who currently use heating oil, given the role this could play in optimising the phasing of the heat transition and the rollout of electric vehicles – and alleviating rates of fuel poverty – in parts of off-gas Scotland. Further information on the phasing of the heat transition can be found in our response to question 27.

55. The Climate Change Committee has suggested that 6% of the UK's demand for aviation fuel could be met by HEFA/HVO by 2050.[57] Having scaled up to support the decarbonisation of heat in the short-term, a mature and appropriately supported domestic Hydroprocessed Esters and Fatty Acids/Hydrotreated Vegetable Oil ("HEFA/HVO") supply chain would therefore appear well placed to pivot to provide a source of aviation biofuels in the medium- to long-term.

56. The potential for plant-based long-chain hydrocarbons to replace fossil fuel derivatives as oils and lubricants also needs to be better understood, and opportunities maximised within the limits of devolved competence to support consumers make more sustainable purchasing decisions, where choice exists.

57. We note that the Scottish TIMES model which supported the Climate Change Plan Update[58] relies on a more rapid deployment of power BECCS than any model used by the Climate Change Committee in the preparation of the Sixth Carbon Budget. We also note the findings of work undertaken for ClimateXChange, which found the Scottish TIMES model's assumptions significantly exceed the available supply of native biomass and therefore rely on significant land use change and/or imports.[59] Supporting policy in these areas is required if power BECCS is to cost effectively contribute to security of supply in the manner proposed.

58. The Climate Change Committee has affirmed that the availability of sustainable bioenergy is essential for reaching net zero.[60] We would therefore recommend that the final draft of the Energy Strategy and Just Transition Plan contains further detail on the Scottish Government's vision for bioenergy in Scotland, even if elements of the strategy for bioenergy have not been fully resolved by the end of 2023. Particular focus will be required on the future for existing and new-build anaerobic digestion – especially from agricultural and wet wastes – with future, local markets for biomethane such as the whisky industry requiring greater attention if a cost efficient transition to net zero is to be realised.

59. We note the work of the Bioenergy Policy Working Group, and recommend that this is appropriately guided by the Bioenergy Expert Panel[61,62] and undertaken with a whole system view, and with due regard for the interests of consumers.

Chapter four – Energy Demand

Heat in Buildings

Q27. What further government action is needed to drive energy efficiency and zero emissions heat deployment across Scotland?

60. The Heat in Buildings Strategy[63] accelerated the Scottish Government's ambition to improve the thermal energy efficiency performance of the majority of Scotland's domestic buildings by seven years (to 2033), and committed the Scottish Government to completely decarbonise space heating in one million homes and 50,000 non-domestic buildings by 2030. While this level of ambition holds the potential to bring significant benefits for consumers in Scotland, it also poses a significant delivery challenge. We recognise that the Scottish Government intends to introduce regulations to drive up thermal energy efficiency standards across the public and private housing sectors, and a public engagement campaign is planned to build consumer awareness and buy-in. A new, National Public Energy Agency will also be created in 2025, with a virtual agency already in place.

61. It will be important that the proposed Heat in Buildings Regulations do not result in an undesirable churn of housing stock between the private rented sector, owner-occupier sector, and the short-term lets sector. Parts of Scotland are already facing an affordable

housing crisis, and it would not be consistent with a just transition if regulations unintentionally made this problem worse. For this reason, we recommend that the Scottish Government fully assesses any risks which might arise for consumers as a result of proposals to introduce a backstop of 2028 for regulatory compliance in much of the private rented sector, when set against a proposed backstop of 2033 for much of the owner-occupier sector and an absence of proposals to introduce equivalent regulations to relevant parts of the short term lets sector.

62. Identification of appropriate triggers for regulatory compliance which dovetail efficiently with proportionate routes to enforcement will also be essential, with consumers given appropriate notice and opportunity to undertake any work required to the highest possible standards, without having to rely on securing an abeyance. Greater attention is also required to ensure that consumers in multiple occupancy and/or multiple use buildings are not left behind by the heat transition, with backstops in this sector not proposed to take effect until the 2040s.

63. The Scottish Government has previously estimated the cost of the heat transition in Scotland to be c. £33 billion.[64] While the majority of this bill will be met by private investment, significant financial support will remain vital for those unable to pay.

64. There is a growing body of evidence that suggests that the macroeconomic events of the last three years have placed such significant financial pressure on households that many who would have previously been considered 'able to pay' may no longer fall into this group, despite not falling into a category of consumers typically considered by policymakers as being particularly vulnerable. Projections about the number of consumers who are likely to be 'unable to pay', or who would face significant challenges in doing so, must be regularly updated to help ensure the scale of support available is sufficient to deliver a just transition. A consumer redress fund may be required to rectify issues with the installation of energy efficiency and zero emissions heating solutions where no fault can be ascribed, and to protect consumers from mis-selling.

65. We are aware of significant concerns around the capacity of the supply chain to deliver the Scottish Government's heat decarbonisation targets.[65] We are also aware of concerns that the phasing of the heat transition in parts of Scotland may delay the adoption of low carbon technologies, or increase the cost of the transition to consumers. For example, there is currently a significant proportion of the North of Scotland electricity distribution licence area that is load constrained for heating. This is

the result of a variety of factors, including the prevalence of traditional electric storage heaters in domestic properties – a heating type that has become increasingly associated with elevated levels of fuel poverty.[66]

66. Presently, the Scottish Government is prioritising off-gas consumers who use heating oil and LPG in the heat transition, despite generally lower levels of fuel poverty among this customer group than among consumers who use traditional forms of electric heating.[67] A data-led, whole system approach to the phasing of the heat transition could improve consumer outcomes, but the absence of local area energy planning acts as a barrier to this and remains a policy gap in Scotland.

67. Local area energy planning is a data driven and evidence-based whole energy system approach to optimising net zero pathways at a local level. Led by local government and developed in collaboration with consumers, communities, and industry, good local area energy planning results in a fully costed spatial and temporal plan that identifies areas for action to support the energy transition through the development of the local energy system and built environment.[68] Local area energy plans complement Local Heat and Energy Efficiency Strategies, in that they consider all sources of energy supply, storage, and demand within a given local area.

68. In an interconnected energy system in which heat, transport, and power are all increasingly reliant on intermittent renewable electricity generation, understanding cross-sector interdependencies will become ever more important to the timely and cost efficient delivery and operation of an energy system for net zero. In future, the role of local area energy plans in informing a regional whole system energy plan for Scotland[69] is also likely to prove invaluable, both for use within Scotland and in providing a reliable evidence base – informed by local needs – for the development of national whole system plans by the Future System Operator and Planner.

Energy for Transport

Q32. What action can the Scottish Government take to ensure that the transition to a net zero transport system supports those least able to pay?

69. Consumer Scotland welcomes the reference to public transport in the draft Energy Strategy and Just Transition Plan but notes the limited detail currently available on how

a just transition to net zero in this sector will be achieved while decarbonising transport and providing better, more accessible services for consumers.

70. Across Scotland, but particularly in rural areas, the Scottish Government may need to provide targeted financial support to facilitate net zero within the transport sector. For example, bus operators are already warning of cuts to services and higher fares in areas across the country[70] upon the end of the Network Support Grant for buses.

71. Concurrently, the costs to bus operators of AdBlue – the exhaust treatment system used to reduce emissions from buses – are causing expenditure pressures to operators and there is a risk that these operating costs may also be passed on to consumers.[71]

72. Any reduction in services or increased fare costs could make bus travel less accessible for some consumers, and especially those in vulnerable circumstances. In the event that this occurs, we would encourage the Scottish Government to explore how to mitigate potential detriment to bus consumers.

73. Consumer Scotland welcomes Scottish Government's ongoing commitment to encourage the switch for consumers to electric vehicles, including the provision of financial support to expand public access to charge points in rural areas especially. While we note that there remains something of a 'postcode lottery' for access to public charge points across local authority areas,[72] we are aware that Transport Scotland have plans in place to address this issue. Where councils, such as East Lothian, provide more charge points per capita – even when there is less initial demand – it has been found that the enhanced charge point availability has helped increase electric vehicle usage in that area.[73] We would therefore support a supply-side approach to increasing access to public charge points where needed.

Chapter five – Creating the conditions for a net zero energy system

Energy Security and Community Resilience

Q40. What additional action could the Scottish Government or UK Government take to support security of supply in a net zero energy system?

Q41. What other actions should the Scottish Government (or others) undertake to ensure our energy system is resilient to the impacts of climate change?

74. Smart local energy systems[74] are central to the delivery of a just transition, facilitating the accelerated deployment of low carbon technologies and supporting behaviour change which will reduce system costs for all consumers. By providing a link between local supply and demand, smart local energy systems also hold the potential to support the Scottish Government's desire to see the financial rewards of the energy transition shared fairly with consumers and enhance community-level resilience to the adverse impacts of a changing climate.

75. Climate models indicate that a warming world will lead to an increase in the frequency and intensity of severe weather events in the UK. Consequently, weather-related disruption to utilities and transport networks such as that seen in the aftermath of Storm Arwen are anticipated to become a more regular occurrence. The appropriate deployment of low carbon generation, storage, and demand side response technologies at community level would provide an opportunity to enhance community level resilience to such disruptive events, and empower consumers to participate more fully in the energy markets of the future.

76. While the development of a regulatory framework to enable the mass rollout of smart local energy systems is beyond the devolved competence of the Scottish Government, local area energy planning would significantly aid in the identification of the opportunities that the energy transition presents to democratise the energy system in Scotland and ensure that its benefits are shared fairly. The ReFLEX Orkney project[75] is a recent Scottish success story, but opportunities also exist to build on the success of innovation projects elsewhere in Great Britain.[76]

77. National Grid ESO's Future Energy Scenarios indicate that an energy transition in which high levels of consumer engagement are secured is likely to be essential for delivering net zero at lowest cost.[77] For a just transition to be realised, consumers therefore need to be empowered to change how they interact with the energy system. Policy which supports behaviour change and the uptake of low carbon technologies, pursued alongside the increasing digitalisation of the energy system, will be vital to ensuring that the energy needs of consumers are met in a way that is clean, secure, affordable, and fair.

78. We note that the current draft of the Energy Strategy and Just Transition Plan does not address community resilience and has little to say about the role of consumers or behaviour change in securing a just transition. We would recommend the final draft of the Strategy and Plan has a greater focus on measurable consumer outcomes and an accompanying set of actions designed to engage and support consumers throughout the transition. We note that the Scottish Government intends to run a public engagement campaign for its Heat in Buildings programme but consider that a wider programme of public engagement, covering all aspects of the transition and spanning multiple years, may also be beneficial. We note the opportunity to build on the "Let's do Net Zero" campaign that was developed ahead COP26.

79. In his recent letter to the Cabinet Secretary for Net Zero and Just Transition, and the Cabinet Secretary for Wellbeing Economy, Fair Work and Energy, the Chair of the Just Transition Commission observed that "*The [current] draft [of the Energy Strategy and Just Transition Plan] treats Scottish energy production and consumption as separate from the UK energy system, however the UK's energy system and economy and the supporting jobs and value to the Scottish economy are interconnected*".[78] Further detail of how the ambition and actions set out in the draft Energy Strategy and Just Transition Plan interact with the wider energy system in Great Britain is vital, to provide confidence that the Scottish Government's plans are economically efficient, maximise the benefits, and minimise the risks of the transition for consumers in Scotland.

Chapter six – Routemap to 2040

Impact Assessments

80. The Fraser of Allander Institute was recently commissioned by the Scottish Government, via ClimateXChange, to undertake research to inform the Joint Budget Review, and make recommendations.[79] This included an assessment of the Scottish Government's current approach to policy development, including the preparation of business cases and impact assessments. Its findings highlighted a range of improvements that could be made across the business case, impact assessment, and policy appraisal process, on issues relating to timescales, capacity, and the application of data.

Q44. Could any of the proposals set out in this strategy unfairly discriminate against any person in Scotland who shares a protected characteristic? These include: age, disability,

sex, gender reassignment, pregnancy and maternity, race, sexual orientation, religion or belief.

81. The current proposals to do not appear to unfairly discriminate against persons with protected characteristics.

82. While rurality is not considered a protected characteristic, consumers in more remote communities such as rural areas and the islands not only experience less consistent access to both affordable fuel and transport,[80] but are also likely to live in key geographic areas for the implementation of plans related to wind and hydro power generation. While we welcome the specific funding set aside for rural communities and projects, rural consumers will require extra consideration and consultation with regards to projects affecting them. We therefore welcome the Island Communities impact assessment being undertaken.

Q46. Is there any further action that we, or other organisations (please specify), can take to protect those on lower incomes or at risk of fuel poverty from any negative cost impact as a result of the net zero transition?

83. A just transition is about more than just ensuring that the costs of delivering net zero are minimised and shared fairly, and ensuring that no-one is left behind; it is also about delivering economic and social wellbeing and value for every community in Scotland. While the scale of this challenge is vast, so too are the possibilities to capture the benefits of the transition to reduce poverty and inequality, and enhance opportunity for consumers in Scotland.

84. The draft Energy Strategy and Just Transition Plan presents an ambitious vision of a net zero Scotland, but would benefit from more detail on how this will be delivered and a greater understanding of distributional costs and benefits for consumers over time. In an increasingly electrified economy heavily reliant on intermittent renewables, a whole system and data-led view is vital to ensuring that cross-sector interdependencies and trade-offs, and the implications of these for consumers, are better understood and accounted for. Local area energy planning[81] and smart local energy systems,[82] will play an important role in accelerating the deployment of low carbon technologies and democratising the energy system in other parts of the UK, and should be embraced in Scotland.

85. Alongside its obligation to reduce the emission of designated greenhouse gasses to net zero by 2045,[83] the Scottish Government has a statutory obligation to significantly reduce fuel poverty by 2030 and virtually eliminate it in every local authority area in Scotland by 2040.[84]

86. We understand that the Fuel Poverty Strategy[85] is currently under review. We recommend that this is led by a quantitative assessment of the current Strategy's strengths and weaknesses, set against a range of reasonable estimates of future energy prices, energy demand, and household incomes. This assessment should be shared with the Fuel Poverty Advisory Panel and other statutory stakeholders at the earliest opportunity. Any revised or refreshed Strategy must be fully costed and capable of showing how each of the Scottish Government's statutory fuel poverty targets will be met.[86]

87. Finally, a just transition to net zero must ensure that those on low incomes do not continue to suffer disproportionate detriment, either from the effects of climate change or from the process of transition.[87] The undertaking of effective impact assessments would help to identify consumers and communities at greatest need of support during transition, and would help to ensure they are able to share fairly in the benefits – financial or otherwise – of an economy-wide adoption of low-carbon technologies. This cannot be achieved without financial incentives and support aimed at consumers who would otherwise struggle with the cost of new technologies.[88] Further work could also be undertaken by the Scottish Government to explore the viability and potential benefits of progressive carbon-based tax policies for low income households.[89]

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