

## **Response from the Royal Society of Biology (RSB) to the call for evidence on the Review of Net Zero**

October 2022

The Royal Society of Biology (RSB) is a single unified voice, representing a diverse membership of individuals, learned societies and other organisations. Our world-leading biosciences sector contributes strongly to the economy, and to society. We are committed to ensuring that we provide Government and other policymakers, including funders of biological education and research, with a distinct point of access to authoritative, independent, and evidence-based opinion, representative of the widest range of bioscience disciplines.

The RSB welcomes the review of the government's approach to delivering its Net Zero target. We have recently published several evidence-based policy responses, informed by our community of members and member organisations. Our recommendations are pertinent to the application of the Net Zero Strategy, in the context of the UK economy, and we summarise them here in response to this call for evidence. Our Member Organisations are listed in Appendix 1.

### **Summary**

**Our response to this call for evidence advises that whilst the Net Zero Strategy should be delivered in a way that is pro-business and pro-growth, it is imperative that this is sustainable and evidence based. Any economic growth will be short-lived if it comes at a cost to existing environmental targets and international agreements. Increased investment in the bioeconomy, coupled with an integrated, One Health approach to policy making, could help facilitate an environmentally sustainable and economically efficient Net Zero transition. When reviewing the strategy, the following points should be considered:**

- **Failure to reach Net Zero in an appropriate time period, based on current expert projections, will lead to potentially disastrous environmental and economic consequences for the UK and the wider world.**
- **Investment in the bioeconomy can feed into overall economic growth, through the creation of jobs and responsible development of more efficient technologies, which can help facilitate a Net Zero transition. However, it is important that funding is allocated in dialogue with researchers and those who use research, with a consideration of both the short and long term potential outcomes, and with an additional focus on inclusivity and improving equality, diversity and inclusion in the bioscience sector.**
- **Any future policy making related to Net Zero should be conducted with an interdisciplinary and interdepartmental approach, encompassing different sectors through a systems thinking strategy, for maximum efficiency and value.**

- **The reversal of biodiversity loss and promoting a net gain in biodiversity through development of evidence based targets should go hand in hand with future Net Zero policies, as the two are inextricably linked.**
- **Also linked to the above, the reversal of environmental damage caused by chemicals and waste pollution, as well as cutting current and future pollution, should also be integrated into the policy framework for reaching Net Zero.**

### About the RSB response

All questions are shown below as they appear on the consultation document. The RSB responses to each question are in [blue text](#).

### Overarching questions

#### 1. How does net zero enable us to meet our economic growth target of 2.5% a year?

Delivery of the UK's net zero targets – using methods and timescales in line with evidence based projections - is imperative for societal survival in the UK and globally. “Rising temperatures across the planet are increasing the risks of catastrophic heatwaves, droughts, wildfires, floods and sea-level rise. The consequences across the globe are bleak: from the loss of biodiversity and the devastation of ecosystems to famine, illness, death. The UK is not immune to climate change and its consequences; mounting evidence shows that climate change has contributed to flood damage, lost crops, lost livelihoods and lost lives”<sup>1</sup>. All of these have significant and long-term economic consequences.

Failing to meet internationally and nationally agreed net zero targets is not an option, if the UK economy is to continue to function. “Beyond a given total of greenhouse gas emissions, meeting the goals of the Paris Agreement becomes essentially impossible, with consequences that will last for centuries”<sup>2</sup>. For example, climate change could have a significant detrimental effect on UK freshwater environments, and “without healthy freshwater systems, human life will become untenable, making 'economic prosperity' a far stretch”<sup>3</sup>.

The RSB welcomes the strategy's commitment to developing a policy roadmap with a focus on renewable alternatives. “The bioeconomy offers the opportunity to substitute conventional materials with renewable and sustainable alternatives [...]. [For example] a successful long-term partnership to promote sustainable construction, with Government, business and the University sector, has led to the commercial development of highly engineered, modern timber buildings that deliver energy and carbon efficiency using domestically grown wood, a renewable resource. The new technology allows multi-storey, modular construction. Buildings can be fabricated quickly and inexpensively off-site and erected on lightweight, low-cost foundations [...] Utilising renewable materials in this manner, for example when producing low-cost domestic and commercial accommodation, could enable substantial energy and carbon footprint advantages. Targeted public procurement of sustainable bio-based products in preference to conventional

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<sup>1</sup> Letter from the Royal Society of Biology to the Prime Minister regarding climate change and the COP26 conference, 2021: [https://www.rsb.org.uk/images/Royal\\_Society\\_of\\_Biology\\_letter\\_in\\_advance\\_of\\_COP26.pdf](https://www.rsb.org.uk/images/Royal_Society_of_Biology_letter_in_advance_of_COP26.pdf)

<sup>2</sup> Letter from the Royal Society of Biology to the Prime Minister regarding climate change and the COP26 conference, 2021: [https://www.rsb.org.uk/images/Royal\\_Society\\_of\\_Biology\\_letter\\_in\\_advance\\_of\\_COP26.pdf](https://www.rsb.org.uk/images/Royal_Society_of_Biology_letter_in_advance_of_COP26.pdf)

<sup>3</sup> Response from the Royal Society of Biology to the Dasgupta Review on the economics of biodiversity, 2019: [https://www.rsb.org.uk/images/RSB\\_response\\_to\\_Dasgupta\\_review\\_-\\_submitted.pdf](https://www.rsb.org.uk/images/RSB_response_to_Dasgupta_review_-_submitted.pdf)

alternatives will help to drive markets directly, improve awareness of these products and support new products entering the market”<sup>4</sup>.

Investing in the research and development of Net Zero strategies will promote growth of the UK bioeconomy, and provide jobs and opportunities to the UK workforce.<sup>5</sup> “Through the various types of bio-based activities, the bioeconomy makes a significant contribution to output and employment in the British economy. The whole bioeconomy, comprising transformative, upstream and downstream elements generated approximately £220 billion in gross value added and supported 5.2 million jobs in 2014”<sup>6</sup>. As stated previously by the RSB, “developing a skilled workforce and supporting businesses are key priorities for the UK bioeconomy. Attracting inward investment from innovative multinational companies would help to increase the growth of the bioeconomy, increasing investment in facilities and training, which would potentially improve industry confidence and stimulate more investment”<sup>7</sup>.

**2. What challenges and obstacles have you identified to decarbonisation?**

**3. What opportunities are there for new/amended measures to stimulate or facilitate the transition to net zero in a way that is pro-growth and/or pro-business?**

**4. What more could government do to support businesses, consumers and other actors to decarbonise?**

**5. Where and in what areas of policy focus could net zero be achieved in a more economically efficient manner?**

Future policy making should seek to deliver evidence based actions through regional, national and international oversight, and collaboration and connection across government departments, by “encompassing all other relevant and current national strategies, pillars and plans, to reduce siloing and maximise joined up work and information sharing across Government, its arm’s length bodies and other organisations, nations, sectors, disciplines and communities”<sup>8</sup>. This could lead to better “interdisciplinary and intersectoral knowledge exchange, discussion, collaboration and decision-making”<sup>9</sup>. A systems thinking approach such as this could lead to multiple wins and efficiencies across sectors, deriving maximum value for input. “Collaboration and integration of individual sectors brings with it substantial opportunities to create additional value. Opportunities can include use of by-products or waste and implementing best practice from other sectors”<sup>10</sup>.

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<sup>4</sup> Response from the RSB to the BEIS consultation on the UK Bioeconomy, 2017:

[https://www.rsb.org.uk/images/RSB\\_response\\_to\\_the\\_BEIS\\_Bioeconomy\\_consultation\\_Final\\_response.pdf](https://www.rsb.org.uk/images/RSB_response_to_the_BEIS_Bioeconomy_consultation_Final_response.pdf)

<sup>5</sup> Campaign for Science and Engineering (CaSE) comment published 17<sup>th</sup> October 2022:

<https://www.sciencecampaign.org.uk/news-media/case-comment/how-r-d-investment-drives-economic-growth.html>

<sup>6</sup> Response from the RSB to the BEIS consultation on the UK Bioeconomy, 2017:

[https://www.rsb.org.uk/images/RSB\\_response\\_to\\_the\\_BEIS\\_Bioeconomy\\_consultation\\_Final\\_response.pdf](https://www.rsb.org.uk/images/RSB_response_to_the_BEIS_Bioeconomy_consultation_Final_response.pdf)

<sup>7</sup> Response from the RSB to the BEIS consultation on the UK Bioeconomy, 2017:

[https://www.rsb.org.uk/images/RSB\\_response\\_to\\_the\\_BEIS\\_Bioeconomy\\_consultation\\_Final\\_response.pdf](https://www.rsb.org.uk/images/RSB_response_to_the_BEIS_Bioeconomy_consultation_Final_response.pdf)

<sup>8</sup> Response from the RSB to the BEIS R&D survey consultation on the UK R&D Roadmap 2020, 2020:

[https://www.rsb.org.uk/images/RSB\\_response\\_to\\_the\\_BEIS\\_survey\\_UK\\_RD\\_Roadmap\\_2020\\_submitted.pdf](https://www.rsb.org.uk/images/RSB_response_to_the_BEIS_survey_UK_RD_Roadmap_2020_submitted.pdf)

<sup>9</sup> Response from the RSB to the BEIS R&D survey consultation on the UK R&D Roadmap 2020, 2020:

[https://www.rsb.org.uk/images/RSB\\_response\\_to\\_the\\_BEIS\\_survey\\_UK\\_RD\\_Roadmap\\_2020\\_submitted.pdf](https://www.rsb.org.uk/images/RSB_response_to_the_BEIS_survey_UK_RD_Roadmap_2020_submitted.pdf)

<sup>10</sup> Response from the RSB to the BEIS consultation on the UK Bioeconomy, 2017:

[https://www.rsb.org.uk/images/RSB\\_response\\_to\\_the\\_BEIS\\_Bioeconomy\\_consultation\\_Final\\_response.pdf](https://www.rsb.org.uk/images/RSB_response_to_the_BEIS_Bioeconomy_consultation_Final_response.pdf)

**6. How should we balance our priorities to maintaining energy security with our commitments to delivering net zero by 2050?**

**7. What export opportunities does the transition to net zero present for the UK economy or UK businesses?**

#### **Questions for businesses**

**8. What growth benefits/opportunities have you had, or do you envisage having, from the net zero transition?**

**9. What barriers do you face in decarbonising your business and its operations?**

**10. Looking at the international market in your sector, what green opportunities seem to be nascent or growing?**

**11. What challenges has the net zero transition presented to your business?**

**12. What impacts have changing consumer choices/demand had on your business?**

**13. What impacts have decarbonisation/net zero measures had on your business?**

**14. What more could be done to support your business and/or sector to decarbonise?**

**15. Do you foresee a role for your business within an expanded UK supply of heat pumps, energy efficiency, electric vehicles, hydrogen economy or clean power?**

**16. For clean power industry: what barriers to entry have you found in deploying new plant and technologies?**

**17. How many green jobs do you estimate will be created in your sector by 2030?**

#### **Questions for the public**

**18. Have you or are you planning to take personal action to reduce your carbon emissions (for example through how you travel, what you buy, how you heat your home)? If so, how?**

**19. Do you face any barriers to doing this? What are they?**

**20. What would help you to make greener choices?**

**21. What is working well about the measures being put in place to reach net zero?**

**22. What is not working well about the measures being put in place to reach net zero?**

**23. Do you have any further comments on how efforts to tackle climate change are affecting you?**

**Questions for local government, communities and other organisations delivering net zero locally**

**24. What are the biggest barriers you face in decarbonising / enabling your communities and areas to decarbonise?**

**25. What has worked well? Please share examples of any successful place-based net zero projects.**

**26. How does the planning system affect your efforts to decarbonise?**

**27. How can the design of net zero policies, programmes, and funding schemes be improved to make it easier to deliver in your area?**

Continued investment and support to the bioscience sector is essential to achieve the proposals highlighted in the Net Zero strategy. The RSB has previously stated how “a healthy environment for innovation is key to attracting private investment in new and expanding technologies, particularly in the biosciences”<sup>11</sup>. However, it is important that any investment is distributed effectively, with a consideration of both short and long term financial and environmental opportunities and sustainability. As highlighted previously by the RSB, “Investment to generate greater value from research is vital, but a focus on near-term impact must not come at a cost to the discovery research in which the UK excels, and which can deliver extraordinary future opportunities over the longer-term. An appropriate balance of applied, translational and discovery research is necessary, and should be reflected in the allocation and duration of public funding”<sup>12</sup>. In addition, it is important to make sure that investment is distributed in a way that includes dialogue with both researchers and the users of research, and promotes equality, diversity and inclusion in the bioscience sector. “a diversity of voices and experiences is integral to good decision making. Prior to future investments, funding discrepancies must be addressed in salaries, infrastructure development and research funding opportunities, with open acknowledgement of why there are gaps within the system and how the deficits can be mitigated in the future, thus ensuring everyone can benefit”<sup>13</sup>.

As well as investment, it is also critical that the government communicates with appropriate experts when designing or modifying net zero policy. “Sound evidence of attribution and expert assessment will be needed to underpin any principles in action, and their inevitable challenge. It is vital that there is a continuous and robust determination to ensure research and expert consultation is undertaken to extend the evidence base for policy, implementation and assessment”<sup>14</sup>.

**28. Are there any other implications of net zero or specific decarbonisation projects for your area that the Review should consider?**

The strategy’s policy of maximising the co-benefits for biodiversity is welcomed. It is important that ‘nature-positive’ strategies enabling reversal of biodiversity loss, and policies promoting net gain in biodiversity, are actioned in tandem with decarbonisation policies facilitating progress to net zero greenhouse gas emissions. “The Dasgupta Review on the economics of biodiversity, commissioned by the Treasury,

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<sup>11</sup> Letter from the Royal Society of Biology to HM Treasury regarding the Comprehensive Spending Review 2021, 2021: [https://www.rsb.org.uk/images/Royal\\_Society\\_of\\_Biology\\_letter\\_-\\_Spending\\_Review\\_2021.pdf](https://www.rsb.org.uk/images/Royal_Society_of_Biology_letter_-_Spending_Review_2021.pdf)

<sup>12</sup> Letter from the Royal Society of Biology to HM Treasury regarding the Comprehensive Spending Review 2021, 2021: [https://www.rsb.org.uk/images/Royal\\_Society\\_of\\_Biology\\_letter\\_-\\_Spending\\_Review\\_2021.pdf](https://www.rsb.org.uk/images/Royal_Society_of_Biology_letter_-_Spending_Review_2021.pdf)

<sup>13</sup> Response from the Royal Society of Biology to the consultation on the draft UKRI Equality, Diversity and Inclusion Strategy, 2022: [https://www.rsb.org.uk/images/Policy/Royal\\_Society\\_of\\_Biology\\_letter\\_draft\\_UKRI\\_EDI\\_strategy.pdf](https://www.rsb.org.uk/images/Policy/Royal_Society_of_Biology_letter_draft_UKRI_EDI_strategy.pdf)

<sup>14</sup> Royal Society of Biology response to the 25 Year Environment Plan inquiry, 2018 :

[https://www.rsb.org.uk/images/RSB\\_response\\_25\\_Year\\_Environment\\_Plan\\_inquiry\\_Submitted.pdf](https://www.rsb.org.uk/images/RSB_response_25_Year_Environment_Plan_inquiry_Submitted.pdf)

highlights the benefits nature provides”<sup>15</sup>. As stated in prior responses by the RSB, “Safeguarding of biodiversity has important economic implications, specifically because it is a key driver of a multitude of ecosystem services, such as soil erosion control, plant nutrient concentration, or invasion resistance. For example, studies focusing on grassland productivity show that “ecologically relevant decreases in grassland plant diversity influenced productivity at least as much as ecologically relevant changes in nitrogen, water, CO<sub>2</sub>, herbivores, drought, or fire”<sup>16</sup>.

A systems based approach is required to make sure that problems are addressed holistically and not simply displaced elsewhere - causing losses and costs at a later date. As indicated previously, “we are keen to support innovation growth through regulatory change which works in harmony with, and does not come at a cost to, our life support systems: our climate and the biodiversity of our ecosystems. Negative externalities/impacts to these systems from human activity must be avoided, including those that could manifest in other parts of the world. We will not succeed in improving our environment by offshoring the damage of production”<sup>17</sup>. It is important to recognise that without informed decision making, “there is a risk that one aspect of the natural environment could be prioritised in terms of financial capital benefit, while neglecting other areas with less direct economic impact, but equal importance”<sup>18</sup>. As stated in the strategy, the financial system in the UK will play a major role in the delivery of net zero, and it will build on the investment principles outlined in the 25 Year Environment Plan including ‘do no significant harm’ to the environment with investment.

To facilitate this, the RSB recommends that “there should be an overarching principle of ‘biodiversity net gain’ to run parallel to the ‘environmental net gain’ approach, to avoid biodiversity being neglected in favour of other aspects of natural capital that could be more directly ‘valued’ financially. This ‘biodiversity net gain’ should be substantially monitored [locally, nationally, and in collaboration with international partners], taking into account the whole extent of biodiversity, and not limited to protection of individual or iconic species”<sup>19</sup>. The RSB welcomes the position that transitioning to Net Zero must be supported by a joined up approach to halting biodiversity loss, and hopes that this remains a key component of the strategy after review.

Additionally, remedying previous environmental damage from chemicals and waste pollution, and tackling and preventing current and future pollution, should also be considered for appropriate integration into policies to deliver Net Zero. We have previously explained how “environmental measures take time to achieve significant impact and, as a result, Government should seek to address both historic (if still relevant) and current externalities. An example of the former is the historic application of fertilisers to agricultural land, which has led to rises in nitrates in the groundwater system for many years following interventions, due to slow migration from the soil layer to the water table. As groundwater maintains the flow of many rivers, their nitrate levels may also be affected by historical land management. It will therefore be necessary to consider and model the effects of historic pollution when monitoring progress towards cleaner

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<sup>15</sup> Letter from the Royal Society of Biology to the Prime Minister regarding climate change and the COP26 conference, 2021: [https://www.rsb.org.uk/images/Royal\\_Society\\_of\\_Biology\\_letter\\_in\\_advance\\_of\\_COP26.pdf](https://www.rsb.org.uk/images/Royal_Society_of_Biology_letter_in_advance_of_COP26.pdf)

<sup>16</sup> Response from the Royal Society of Biology to Defra’s consultation on “Health and Harmony: the future for food, farming and the environment in a Green Brexit”, 2018:

[https://www.rsb.org.uk/images/RSB\\_response\\_to\\_Defra\\_consultation\\_on\\_Health\\_and\\_Harmony\\_submitted.pdf](https://www.rsb.org.uk/images/RSB_response_to_Defra_consultation_on_Health_and_Harmony_submitted.pdf)

<sup>17</sup> Letter from the Royal Society of Biology submitted in response to a call from the Taskforce on Innovation, Growth and Regulatory Reform (TIGRR), 2021:

[https://www.rsb.org.uk/images/Letter\\_from\\_RSB\\_CEO\\_Mark\\_Downs\\_to\\_George\\_Freeman\\_MP\\_input\\_for\\_TIGRR\\_submitted.pdf](https://www.rsb.org.uk/images/Letter_from_RSB_CEO_Mark_Downs_to_George_Freeman_MP_input_for_TIGRR_submitted.pdf)

<sup>18</sup> Response from the Royal Society of Biology to the Defra consultation on Environmental Principles and Governance after EU Exit, 2018:

[https://www.rsb.org.uk/images/RSB\\_response\\_Defra\\_Environmental\\_Principles\\_inquiry\\_submitted.pdf](https://www.rsb.org.uk/images/RSB_response_Defra_Environmental_Principles_inquiry_submitted.pdf)

<sup>19</sup> Royal Society of Biology response to the 25 Year Environment Plan inquiry, 2018 :

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waters. It is possible that phosphorus levels may remain high in some places, even more so than nitrogen, because of the relative insolubility of phosphorus – this may not be a serious problem but it could conceivably slow the restoration of biodiversity<sup>20</sup>. Since protection of biodiversity and improved water quality are key features of the Net Zero strategy, it is important to consider the potentially detrimental effects on these from historic actions, and linked strategies aimed at tackling the resultant externalities today. For example, harnessing the power of new techniques such as gene editing, has the potential to produce crops with reliable yields, and a reduced reliance on agrochemicals<sup>21</sup>. In addition, “the ‘polluter pays’ principle, with an emphasis on an ‘extended producer responsibility’ strategy [should] provide an effective and fair underpinning for future policymaking, and, combined with a greater emphasis on consumer responsibility, could deliver environmental benefits”<sup>22</sup>. It is important that the Government does not row-back on programmes where this principle has previously been applied.

Finally, the review should make sure that the targets mentioned in the strategy are adhered to, since the health and longevity of our society and environment depends on a definitive and swift transition to net zero. Previous responses from the RSB have highlighted concerns over preceding environmental targets. For example, “In May 2021, the International Energy Agency stated that in order to limit the rise in global temperatures to 1.5°C, no new fossil fuel developments should be approved by government beyond those already committed as of 2021. It is of further concern, therefore, that construction of a deep coal mine is under consideration in Cumbria and permits have been sought for oil and gas exploration [...] in the North Sea”<sup>23</sup>.

## Questions for academia and innovators

### 29. How can we ensure that we seize the benefits from future innovation and technologies?

Investment in the bioscience sector as a whole has a crucial part to play in both the creation and application of future technologies. The fact that the government is using the integration principle in its Net Zero strategy is welcomed by the RSB. As noted in prior responses, “The integration principle is at the core of sustainable development, whereby environmental objectives and protection requirements are integral to the development process and therefore relevant to policy formulation, decision-making, and implementation across economic and social sectors. While many research topics at the root of environmental issues are broad, they are highly interconnected and therefore all are of relevance and importance. Improvements in one area may directly or indirectly lead to improvements in another, including via non-market impacts of investment in R&D. For example, advances in waste management (such as waste-to-energy) have enabled the collection of data, the analysis of which has in turn reduced energy requirements and improved energy recovery. Such processes mitigate climate change over time by reducing CO<sub>2</sub> emissions. Similarly, the development of agri-tech, while [arguably] primarily commercially motivated to assist in efficient and profitable farming, also has the potential for wider environmental benefits. Reduced and more efficiently targeted fertiliser or chemical use profits soil health, and reduces water pollution and energy consumption”<sup>24</sup>. Supporting research in the sustainable development sector can lead to both the

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<sup>20</sup> Response from the Royal Society of Biology to Defra’s consultation on “Health and Harmony: the future for food, farming and the environment in a Green Brexit”, 2018:

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<sup>21</sup> UK Plant Sciences Federation 2019: [Growing the Future](#)

<sup>22</sup> Royal Society of Biology response to the 25 Year Environment Plan inquiry, 2018 :

[https://www.rsb.org.uk/images/RSB\\_response\\_25\\_Year\\_Environment\\_Plan\\_inquiry\\_Submitted.pdf](https://www.rsb.org.uk/images/RSB_response_25_Year_Environment_Plan_inquiry_Submitted.pdf)

<sup>23</sup> Letter from the Royal Society of Biology to the Prime Minister regarding climate change and the COP26 conference, 2021: [https://www.rsb.org.uk/images/Royal\\_Society\\_of\\_Biology\\_letter\\_in\\_advance\\_of\\_COP26.pdf](https://www.rsb.org.uk/images/Royal_Society_of_Biology_letter_in_advance_of_COP26.pdf)

<sup>24</sup> Response from the Royal Society of Biology to the Defra consultation on Environmental Principles and Governance after EU Exit, 2018:

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improvement of existing technologies and the generation of new ones, and could have beneficial applications in a wide range of areas.

The RSB has previously stated how, “Various technologies will enhance our understanding of biodiversity and how to protect it”<sup>25</sup>, and that “Technology presents opportunities to reduce biodiversity loss without restricting economic activities, for example through new crop and livestock varieties with higher and more stable yields and quality, and resistance to pests and pathogens. The development of drought-tolerant maize and blight resistant potatoes are examples of crops created using new plant breeds”<sup>26</sup>. Supporting the development of this sector would allow modern technologies to play a role in preventing biodiversity loss whilst also facilitating the implementation of the Net Zero strategy in a sustainable manner.

Finally, it is important to promote equality, and diversity and inclusion in the bioscience sector, as “A diversity of voices and experiences is integral to good decision making”<sup>27</sup>. By investing in this sector, through areas such as training and recruitment, there is the potential to develop and capture a broader range of talents, experiences and ideas, which can in turn lead to the development of new and enhanced future technologies. “Acknowledging the importance of diversity at all levels, and leading by example to facilitate and monitor rich and meaningful organisation-wide approaches to equality, brings benefits for workforce culture and builds new opportunities”<sup>28</sup>.

### **30. Is there a policy idea that will help us reach net zero you think we should consider as part of the review?**

The RSB has previously indicated how “The biodiversity crisis is inextricably linked with the climate crisis [and thus the necessity to reach Net Zero]. Both require urgent and immediate action, and rational decision-making must address both together. The Dasgupta Review on the economics of biodiversity highlights the opportunities of wise, connected policymaking, and the dangers of working in siloes. Habitat protection and restoration are key in adapting and providing resilience to our changing climate. Nature-based solutions can help to tackle climate change while enhancing nature and improving human wellbeing. For example, restoration of peatlands, seagrasses, saltmarshes, forests and other ecosystems will both sequester carbon and increase biodiversity”<sup>29</sup>. Carbon sequestration through nature based solutions is included in the Net Zero strategy, and it is important that any review into this policy does not jeopardise this objective, alongside targets for net gain in biodiversity. It is crucial that any new approaches to facilitate carbon sequestration do not involve the displacement or destruction of key biodiversity areas. To prevent this, suitable metrics must be put in place to appropriately value natural capital. Without these, “there is a risk that one aspect of the natural environment could be prioritised in terms of financial benefit, while neglecting other areas with less direct economic impact but equal importance for the protection of biological diversity and societal wellbeing”<sup>30</sup>.

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<sup>25</sup> Response from the Royal Society of Biology to the Dasgupta Review on the economics of biodiversity, 2019: [https://www.rsb.org.uk/images/RSB\\_response\\_to\\_Dasgupta\\_review\\_-\\_submitted.pdf](https://www.rsb.org.uk/images/RSB_response_to_Dasgupta_review_-_submitted.pdf)

<sup>26</sup> Response from the Royal Society of Biology to the Dasgupta Review on the economics of biodiversity, 2019: [https://www.rsb.org.uk/images/RSB\\_response\\_to\\_Dasgupta\\_review\\_-\\_submitted.pdf](https://www.rsb.org.uk/images/RSB_response_to_Dasgupta_review_-_submitted.pdf)

<sup>27</sup> Response from the Royal Society of Biology to the consultation on the draft UKRI Equality, Diversity and Inclusion Strategy, 2022: [https://www.rsb.org.uk/images/Policy/Royal\\_Society\\_of\\_Biology\\_letter\\_draft\\_UKRI\\_EDI\\_strategy.pdf](https://www.rsb.org.uk/images/Policy/Royal_Society_of_Biology_letter_draft_UKRI_EDI_strategy.pdf)

<sup>28</sup> Response from the Royal Society of Biology to the consultation on the draft UKRI Equality, Diversity and Inclusion Strategy, 2022: [https://www.rsb.org.uk/images/Policy/Royal\\_Society\\_of\\_Biology\\_letter\\_draft\\_UKRI\\_EDI\\_strategy.pdf](https://www.rsb.org.uk/images/Policy/Royal_Society_of_Biology_letter_draft_UKRI_EDI_strategy.pdf)

<sup>29</sup> Letter from the Royal Society of Biology to HM Treasury regarding the Comprehensive Spending Review 2021, 2021: [https://www.rsb.org.uk/images/Royal\\_Society\\_of\\_Biology\\_letter\\_-\\_Spending\\_Review\\_2021.pdf](https://www.rsb.org.uk/images/Royal_Society_of_Biology_letter_-_Spending_Review_2021.pdf)

<sup>30</sup> Response from the Royal Society of Biology to the Defra consultation on Environmental Principles and Governance after EU Exit, 2018:

[https://www.rsb.org.uk/images/RSB\\_response\\_Defra\\_Environmental\\_Principles\\_inquiry\\_submitted.pdf](https://www.rsb.org.uk/images/RSB_response_Defra_Environmental_Principles_inquiry_submitted.pdf)

The concepts outlined in the strategy should be implemented across all areas of society, and the strategy's goal of co-ordinated action across different sectors is welcomed. The Society recommends that "to reach net zero, policy is needed to drastically reduce emissions and increase efficiency in all emitting sectors. Consideration of climate risk must be embedded in all financial decisions of public and private bodies, including pandemic recovery plans – something the scientific community could help to assess. We must ensure that measures to reduce UK emissions do not lead to rises elsewhere and we must ensure that we take the right measures to achieve net zero carbon with benefits for nature. Further, support is desperately needed for adaptation to the changing climate, both in the UK and in [Low and Middle Income Countries, LMICs]"<sup>31</sup>. It is important that future Net Zero policies are designed with a One Health (OH) approach. As part of this, "Government must coordinate with funders and other stakeholders to enhance and incentivise OH research and education; and integrate the OH evidence base, approaches and principles into policymaking, as part of systems-based and long-term strategies to tackle current and future threats"<sup>32</sup>. This approach would ensure that the many areas affected by climate change and subsequent Net Zero policy are considered in relation to one another, leading to solutions that safeguard human, animal, and environmental health.

Additionally, there should be a focus on societal dialogue, education, and information sharing for awareness, with regards to both the need and actions required for a Net Zero transition. An example of this would be "[improving] awareness of the benefits of [responsibly sourced/produced and environmentally sustainable] bio-based products among the general public- for example through discussion in educational curricula about sustainability at all levels"<sup>33</sup>. The RSB has published recommendations and framework for curricula, *Evolving 5-19 Biology*, intended for use by policymakers, schools and awarding organisations to inform future curriculum review and specification design in general, technical and vocational courses. Sustainability is included in the theme "Developing applications to promote human and environmental wellbeing" and features as part of the big question "How do people use biological knowledge?"<sup>34</sup>.

These actions are important as "Public support [...] enables political leaders to support bolder policies"<sup>35</sup>, which could help facilitate a quicker and more sustainable transition to Net Zero. Equally, citizens require the right supportive environment and opportunities to be available across communities, in order for them to make decisions which facilitate this environmentally sustainable transition, at the individual level.

Finally, it is important that the government consults with appropriate experts when making decisions around the Net Zero Strategy, as "Sound evidence of attribution and expert assessment will be needed to underpin any principles in action, and their inevitable challenge. It is vital that there is a continuous and robust determination to ensure research and expert consultation is undertaken to extend the evidence base for policy, implementation and assessment"<sup>36</sup>. The Royal Society of Biology would be well placed to help in this regard, through connection with our broad membership of expertise across individuals and organisations in the biosciences.

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<sup>31</sup> Letter from the Royal Society of Biology to the Prime Minister regarding climate change and the COP26 conference, 2021: [https://www.rsb.org.uk/images/Royal\\_Society\\_of\\_Biology\\_letter\\_in\\_advance\\_of\\_COP26.pdf](https://www.rsb.org.uk/images/Royal_Society_of_Biology_letter_in_advance_of_COP26.pdf)

<sup>32</sup> RSB response to the Cabinet Office call for evidence on the UK's Biological Security Strategy, 2022 : [https://www.rsb.org.uk/images/Policy/RSB\\_response\\_CO\\_biological\\_security\\_strategy\\_submitted\\_and\\_summarised\\_for\\_publication.pdf](https://www.rsb.org.uk/images/Policy/RSB_response_CO_biological_security_strategy_submitted_and_summarised_for_publication.pdf)

<sup>33</sup> Response from the RSB to the BEIS consultation on the UK Bioeconomy, 2017: [https://www.rsb.org.uk/images/RSB\\_response\\_to\\_the\\_BEIS\\_Bioeconomy\\_consultation\\_Final\\_response.pdf](https://www.rsb.org.uk/images/RSB_response_to_the_BEIS_Bioeconomy_consultation_Final_response.pdf)

<sup>34</sup> Royal Society of Biology 2021: [Evolving 5-19 Biology: recommendations and framework for 5-19 biology curricula.](https://www.rsb.org.uk/images/Evolving_5-19_Biology_recommendations_and_framework_for_5-19_biology_curricula.pdf)

<sup>35</sup> Response from the Royal Society of Biology to the Dasgupta Review on the economics of biodiversity, 2019: [https://www.rsb.org.uk/images/RSB\\_response\\_to\\_Dasgupta\\_review\\_-\\_submitted.pdf](https://www.rsb.org.uk/images/RSB_response_to_Dasgupta_review_-_submitted.pdf)

<sup>36</sup> Royal Society of Biology response to the 25 Year Environment Plan inquiry, 2018 : [https://www.rsb.org.uk/images/RSB\\_response\\_25\\_Year\\_Environment\\_Plan\\_inquiry\\_Submitted.pdf](https://www.rsb.org.uk/images/RSB_response_25_Year_Environment_Plan_inquiry_Submitted.pdf)

## Appendix 1: Member Organisations of the Royal Society of Biology

### Full Organisational Members

Agriculture and Horticulture Development Board  
 Anatomical Society  
 Applied Microbiology International  
 Association for the Study of Animal Behaviour  
 Association of Applied Biologists  
 Association of Reproductive and Clinical Scientists (ARCS)  
 Biochemical Society  
 British Association for Lung Research  
 British Association for Psychopharmacology  
 British Biophysical Society  
 British Ecological Society  
 British Lichen Society  
 British Microcirculation and Vascular Biology Society  
 British Mycological Society  
 British Neuroscience Association  
 British Pharmacological Society  
 British Phycological Society  
 British Society for Cell Biology  
 British Society for Developmental Biology  
 British Society for Gene and Cell Therapy  
 British Society for Immunology  
 British Society for Matrix Biology  
 British Society for Neuroendocrinology  
 British Society for Parasitology  
 British Society for Plant Pathology  
 British Society for Proteome Research  
 British Society for Research on Ageing  
 British Society of Animal Science  
 British Society of Soil Science  
 British Society of Toxicological Pathology  
 British Toxicology Society  
 Daphne Jackson Trust  
 Field Studies Council  
 Fisheries Society of the British Isles  
 Fondazione Guido Bernardini  
 GARNet  
 Gatsby Plant Science Education Programme (incl. Science and Plants for Schools)  
 Genetics Society

Heads of University Centres of Biomedical Science  
 Institute of Animal Technology  
 Laboratory Animal Science Association  
 Linnean Society of London  
 Marine Biological Association  
 Microbiology Society  
 MONOGRAM – Cereal and Grasses Research Community  
 Network of Researchers on the Chemical Evolution of Life  
 The Nutrition Society  
 Society for Experimental Biology  
 Society for Reproduction and Fertility  
 Society for the Study of Human Biology  
 The Physiological Society  
 UK Environmental Mutagen Society  
 United Kingdom Society for Extracellular Vesicles  
 Universities Federation for Animal Welfare  
 University Bioscience Managers' Association  
 Zoological Society of London

### Supporting Organisational Members

Animal & Plant Health Agency (APHA)  
 Association of the British Pharmaceutical Industry (ABPI)  
 AstraZeneca  
 BioIndustry Association  
 Biotechnology and Biological Sciences Research Council (BBSRC)  
 British Science Association  
 Ecological Continuity Trust  
 Ethical Medicines Industry Group  
 Fera  
 Institute of Physics  
 Medical Research Council (MRC)  
 NNEdPro Global Institute for Food, Nutrition and Health  
 Northern Ireland Water  
 Royal Society for Public Health  
 Severn Trent Water  
 Syngenta  
 Understanding Animal Research  
 Unilever UK Ltd  
 United Kingdom Science Park Association  
 Wellcome  
 Wessex Water  
 Wiley Blackwell

