



What matters when we think about environmental science?

Summary report

A public dialogue on contemporary issues in environment science

Hopkins Van Mil
September 2023



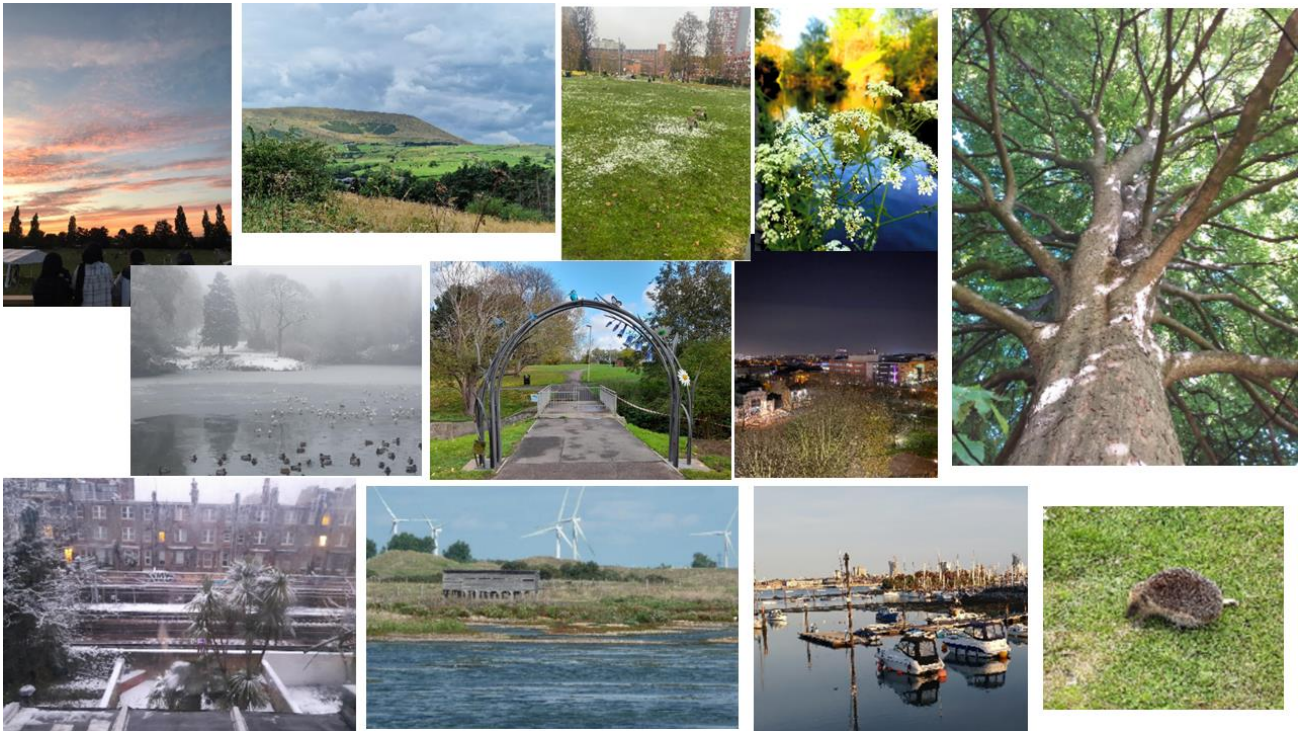
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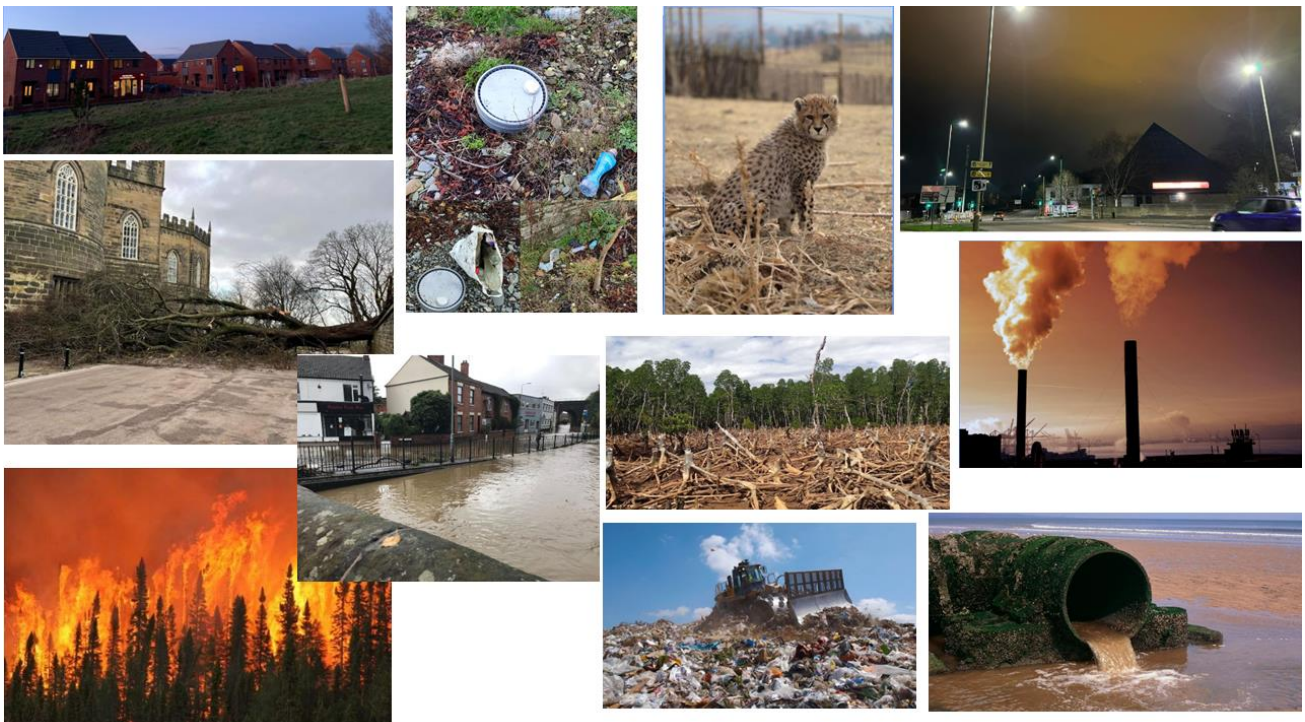
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Bringing people together to inform the future

A sample of participants images: what inspires me in the environment



A sample of participant images: what concerns me in the environment



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How to read this report

Qualitative research reports, including this one, do not report on the number of times something was said, but rather the strength of feeling expressed. As such HVM uses the following quantifiers in the report:

- 'Many' or 'most' when all, or almost all, participants share a similar view
- 'Some' when less participants shared a similar view
- 'A few' when a small number of participants shared a similar view

Bullet points are used to summarise key points made. These mostly reflect areas of agreement and where points were made by many participants across many of the groups.

There are two types of headings for each participant priority, one in standard reporting language, the second (as a result of co-design group discussions), in the words of participants.

Text in boxes throughout this summary report highlight areas where participants suggest there is the potential for focused action for NERC and environmental science.

Anonymised quotations are used to highlight points made by a number of participants and to underline points made by a range of people. They also highlight points of particular significance to participants. More quotations are available in the full report.

The photographs of the environment used in the report were shared by participants in the dialogue to explain key points, particularly on what inspires them and what concerns them about the environment. The photographs of workshop participants are credited to [Faraday Media](#).

The illustrations are from Lydia Hopkins Design, who has also produced the [animated executive summary](#) which accompanies the reports.

1. Introducing the dialogue

This public dialogue was commissioned by the Natural Environment Research Council (NERC) in August 2022. The purpose of the process was to bring together people from across the UK: environmental scientists, public participants and NERC team members to identify where public input has the most potential to shape environmental science research agendas. The dialogue set out to gain a better understanding of:

- What dialogue participants prioritise and have most interest in in relation to contemporary issues in environmental science
- The rationale between these priorities and interests
- How diverse publics can be involved in NERC decision making

About the dialogue process

Embedded from the beginning of this process was the principle of co-design. This was essential to NERC's ambitions for an inclusive and diverse programme. For Hopkins Van Mil (HVM), putting co-design at the heart of the programme design and delivery gave us the assurance that we were operating within our values and meeting participant needs. A co-design group was established in the autumn of 2022 and met five times during the course of the design, delivery and reporting of the programme. One of the group's first tasks was to review and agree the following co-design principles:

- **Inclusive:** from the very beginning to the very end of the dialogue process
- **Trusted:** taking the time to build relationships in which people know they are valued.
- **Respectful:** all participants are respected for their expertise and their input has equal standing
- **Iterative:** ideas & solutions are continually proposed tested & evaluated by the group

These principles have been applied to all aspects of the dialogue.

Who was involved as a participant in the dialogue?

Participants were recruited to the dialogue informed by Britain Talks Climate Seven Audience Segmentations¹. We used three methods of recruitment:

1. **Community Groups:** connections were made with community groups across the UK. These groups are not groups that specialise or are specifically interested in environment, nature, climate change or campaigning on these issues. 63 people were involved from community groups.
2. Purposefully recruiting participants creating **geographic groups** in line with a recruitment specification designed with the Co-design and Advisory groups. 37 people were involved from purposeful recruitment.

¹ <https://climateoutreach.org/britain-talks-climate/seven-segments>

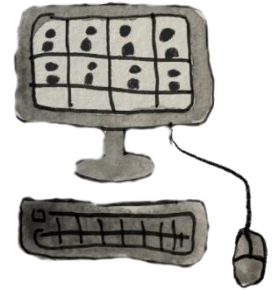
3. Reaching out through NERC networks, funding announcements and funded organisations to involve **NERC team members**, and **environmental scientists** and **policy makers** in the process.

Four NERC team members and eleven environmental scientists attended the final in-person workshop, in addition 67 public participants, drawn from the community groups and purposeful public recruitment also attended, giving a total involvement figure for that workshop of 82 participants.

The dialogue process

The dialogue fieldwork began in November 2022 and concluded in February 2023. It involved:

- A set of two workshops, each workshop set run five times for each community group and each set of purposefully recruited participants
- A final 'Open Space Forum'² workshop for community group members, the purposefully recruited participants, NERC team members and environmental scientists.



Using the co-design principles, the dialogue was designed to give participants with lived (rather than professional) experience the opportunity to develop their understanding of the environment; environmental science and current research topics in the early workshops. They were then joined by NERC team members and environmental scientists in the final workshop.



Stimulus materials came from three main sources:

- Photographs taken by participants to illustrate an aspect of concern or interest from their own environment
- Existing NERC materials such as films³ and infographics⁴
- Materials created by HVM and the Co-design group to explain and summarise the evidence and information.

Public dialogue was chosen as the format to ensure that participants are given time and a level playing field to discuss the issues that matter to individuals, to communities and to society. This public dialogue was designed using Sciencewise⁵ public dialogue principles and quality framework. More information on participant recruitment and the co-designed dialogue process can be found in the full dialogue report available from publicengagement@nerc.ukri.org.

² Devised by Harrison Owen in the 1980s: Owen, Harrison (2008). *Open space technology : a user's guide*. San Francisco, Calif: Berrett-Koehler Publishers.

³ Including from [NERC Impact Award](#) winning projects and information on [climate change](#)

⁴ Such as NERC [Cleaning up our air](#) infographic

⁵ <https://sciencewise.org.uk/about-sciencewise/our-guiding-principles/>

2. The dialogue findings

One of the main reasons for conducting this dialogue was to develop NERC's understanding of what participants prioritise and have most interest in in relation to contemporary issues in environmental science. The most significant overarching priority is climate change, and action to ensure society can live sustainably by prioritising the health of our planet.

Participants prioritise topics which are interesting to them because of the:

- Urgency and the importance of the challenges they present
- Way they demonstrate an area of environmental science which requires research to understand how to best balance planetary and human needs.

This summary report is structured around the six topics that participants consider a priority when thinking about issues in contemporary environmental science.

2.1 Climate change and its impacts

What are we doing to the planet?

Participants are concerned about the visible signs of climate change such as changing weather patterns and increased extreme weather events (such as flooding and wildfires). They prioritise:

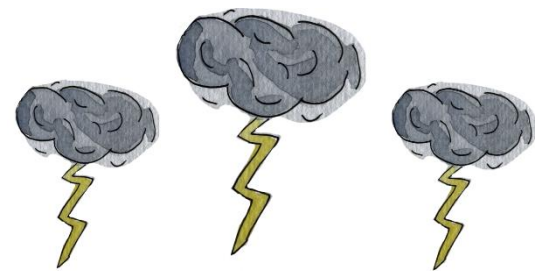
- Urgent action to stop extracting and using fossil fuels, wanting to see a commitment from industry and government to make significant investment in alternative and renewable energy sources
- Support for everyone to transition to a more sustainable future, including alternative forms of transport
- Addressing all forms of pollution including improving air, water and soil quality.

What participants discussed to reach these conclusions is contained in the summary below.

Extreme weather

Participants are concerned about extreme weather events. They comment on the growing frequency and intensity of such events, including heatwaves; drought and wildfires; intense rainfall and floods; storms; and coastal impacts. One person reflects

that when they were younger they would only occasionally hear about extreme weather events, whereas as now they seem to be happening "pretty constantly."



"I think it's more extreme weather changes that we're seeing now... you put the news on you see all these wildfires happening and these floods happening. It's just

very extreme... and it's really sad to see our world changing in such a way.”

There is a sense from the media and through personal connections that many places are experiencing a greater frequency and intensity of extreme climate events.

Participants express the hope that and stress the importance of going beyond monitoring and using environmental science to research solutions to climate change.

“Solutions, yes. We should be looking for the solution to it, not just monitoring. We know it's getting worse, everyone knows everything is getting worse.”

Participants are also deeply concerned about increasing flooding around the UK. They discuss the significant impact floods have on people's lives, including the damage it causes to properties, and the extended time it can take for families and communities to recover from them. Additionally, they explain that they have to live with the worry that it might happen again.



“Recovering from extreme weather is really tough, when everyone's forgotten that you had that flood...And then people are really rightly worried about whether that's

A focus for NERC and environmental science

Participants feel it is imperative for environmental science research to investigate the threat posed by climate change and extreme weather events. They emphasise the importance of monitoring and predicting changing weather patterns and extreme weather events, as well as understanding what is caused by climate change and where other factors are involved. They believe that studying how these events could potentially impact communities is crucial so that they can be prepared.

going to happen again.”

Alternative and renewable energy sources

Participants' desire for research to focus on renewable energy as a means to cut carbon emissions, with a particular emphasis on wind and solar energy. A few others

see potential in exploring other energy sources, such as hydrogen, nuclear power and hydropower, along with community energy schemes.

“I think the most pressing concern is cleaner energy, moving away from fossil fuels to the likes of wind

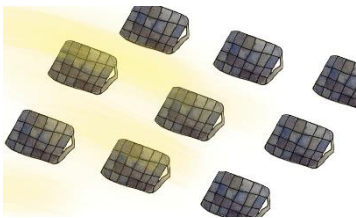
A focus for NERC and environmental science

The impact of the energy crisis on UK households is a cause for concern for participants. A focus for environmental science for some participants as a result could be on making renewable energy affordable, so that society as a whole can benefit from it.

farms.”

Some participants think that more people may consider using renewable energy, like solar panels, because of rising energy costs. Some frustration is expressed with current policies on renewable energy. They describe the government’s approach as ad hoc and reactive.

“They are pulling things out of their hats. There should be some research done into it, with what works and what doesn’t work”.



Participants sense that **solar energy** is a type of renewable energy more easily accessible to the public. Several participants have noticed a growing number of consumer solar panels being installed and some hope to see solar panels installed on every house. Some discuss the apparent barriers to installing domestic solar panels in the UK.

Participants are positive about what has been achieved in relation to using **wind to generate energy**. They would like to know that research is focused on this specific renewable energy.

“I know environmental science, a lot of people think it's just the environment, the planet, the oceans. But I think I'd like to see us do more research into technologies, into wind farm technologies.”

A number of participants enthusiastically discuss ideas regarding **community energy and consumer level renewable energy projects**. They are interested in community organisations using solar power and portable wind turbines to run equipment and have examples of these tools working well. These participants are

enthusiastic for these technologies to be further encouraged at a local level, for example.

They also share their thoughts on the importance of solar panels and other consumer infrastructure that would help people to lessen their carbon impact. They believe that such facilities will allow consumers to have facilities where they can work and live without significantly affecting the environment.

A focus for NERC and environmental science

Many participants **explicitly emphasise the importance of research into renewable energy**. Investigating what types of renewable energy products and technologies would be most suitable for different areas and environments is a priority for some. Many participants share a belief that research should focus on making renewable energy sources more efficient, more affordable and that innovative methods to heat people's homes should be explored.

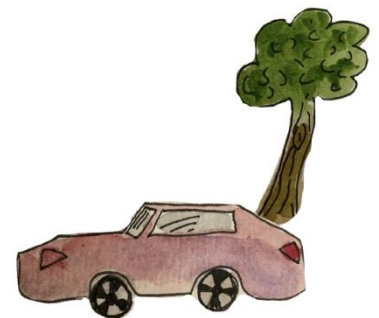
A number of participants want research to **focus on the trade-off between the potential negative and positive impacts of renewable energy projects on the environment**, given that these projects have both pros and cons. They cite research on the:

- Impact on wildlife, for example, the impact of wind energy farms on bird life and endangered species, and hydropower plants on fish populations and other wildlife
- Amount of land that renewable energy projects require, such as fields with solar panels, in comparison to fossil fuel energy production
- The role of hybrid technologies in addressing challenges until a full transition to renewable energy sources can be achieved.

Transitioning transport to be more sustainable

Participants see transitioning to different forms of transport which do not rely on fossil fuels as part and parcel of their interest in combatting climate change. A light was shone on **car use** during the dialogue.

“Can I just say that I feel there are far too many cars now on the streets. Wherever you go, you'll see one household will have two or three cars. We can't address climate change if we don't change that.”



When participants think about how the environment has changed in recent years, they reflect that there are many more cars on the road, which leads to congestion. They observe, reflecting on their own personal experience, that there has been an increase in the number of households that have more than one car.

“I've noticed that more people have got vehicles or each household, probably. When I was younger only my dad had a car, now, everyone has got a car. Nobody uses public transport as much.”

They consider pollution to be a significant threat to populations and are pleased to hear that NERC funded research on poor air quality⁶ has led to positive change.

Their specific concerns around an increase in car use include:

- Greater congestion in town and city centres
- The UK's culture of car ownership which means fewer people consider alternatives
- New housing developments cited in places without transport infrastructure leading to an increase reliance on the car
- The road safety implications of more cars on the road.

Some participants are excited about developments in electric vehicles (EVs) and the growth that has taken place in recent years. One person feels that one company's proactive stance on developing and promoting EVs has had a “snowball” effect, resulting in other manufactures developing EVs as well.

“You know, electric cars had the reputation of being these slow, clunky, horrible things. But now everyone's excited about electric cars, how cool they are and it's the future and now it's becoming this snowball effect.”

⁶ NERC funded research on [cleaning up our air and cutting the costs of pollution](#)

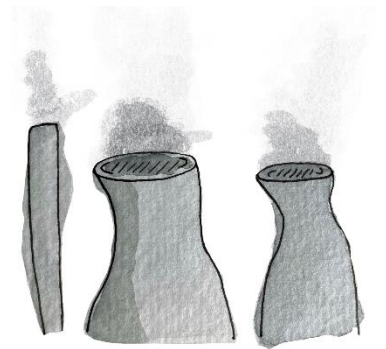
A focus for NERC and environmental science

Many participants want new thinking in relation to how we travel, how we fuel our cars, and whether we should use cars at all. As a result, participants raised the following topics as important for them for continued or further research:

- Comparisons between alternatives to petrol and diesel e.g., electric and hydrogen vehicles – what are the pros and cons, which leads to less environmental harms
- Leading to impact assessments to inform which forms of personal travel really are the future in a net zero environment
- Comparisons between various measures to reduce car use such as increased/ improved cycle lanes, low-traffic neighbourhood zones, improved public transport and improved travel infrastructure
- To inform how we can achieve a car-free environment
- On measures to capture more carbon in our towns and cities such as tree planting, green rooftops and other measures to mitigate against pollution.

Address pollution in all its forms

Participants consistently brought pollution into considerations on climate change and the impacts humans are having on the planet. They place a very high priority on addressing air pollution and water pollution. Additionally, some participants mention worries about light pollution.



“I think for air quality, it has changed a lot as well. I think when I was little, the sky was much clearer. You have more clear days than now and the air quality, if you live in the city, you can totally feel a difference, when you get out in the country.”

A few participants think that air pollution levels may have improved in some areas, due to legislation, such as the Ultra Low Emission Zones (ULEZ) in London, aimed at reducing pollution from fossil fuel vehicles. They also feel the introduction of hybrids and EVs may be making a difference to the quality of the air.

“From my point of view, I think the air quality's a lot better, considering the number of vehicles on the road now, as opposed to maybe, 15, 20 years ago. I can remember when, like, black plumes of smoke were coming out of the back of, like, vans and cars, but you very rarely get that.”

Concerns remain however, for people living in communities experiencing social and economic deprivation. They feel that they don't necessarily benefit from measures such as clean air zones, because they aren't in the city centre.

“The emissions especially, like, the pollution in Birmingham is ridiculous. They've introduced a clean air zone in the city centre, but outside in the poorer parts of Birmingham it's a problem that still needs to be tackled.”

The reason air quality and pollution are concerning for participants is explicitly the impact on people's health. For example, increasing incidence of asthma and cancer.

“I was talking about pollution, air pollution... I'm asthmatic and there's more asthmatics now, more people with cancers.

A few people are particularly worried about the impact of air pollution on city communities experiencing racial inequalities. They perceive there has been a rise in prevalence of certain medical conditions associated with poor air quality within these communities, such as Chronic Obstructive Pulmonary Disease (COPD), cancer and asthma.

“Because as an asthmatic pollution is rife. There are high cases of COPD, asthma, especially in the BAME community, and cancer is on the rise. We never had that 30 years ago. There are more cancer issues now in the BAME community than there ever was. It was an unknown factor and it's all to do with pollution.”

Participants discuss what they think is causing air pollution. They think that the amount of traffic on the roads is a contributing factor, as well as local industries, such as steelworks.



Many participants express concerns about pollution in the UK's waterways and coastal areas. They specifically mention pollutants such as sewage, waste, plastics, and agricultural runoff. There is concern about the impact of water pollution on the natural environment, including freshwater and marine life, as well as its implications for humans, such as the quality of drinking water and impact on recreational activities.

“I just wanted to highlight the issue of water pollution... I just felt like the water is just so murky and it's not blue at all. It just made me wonder about how poisoned and polluted that water probably is, and that's a huge environmental concern.”



Some participants mention light pollution. They are concerned that seeing a starry night is impossible in built up areas. They find this sad, and another way in which humans are being disconnected from the natural environment. They link it to climate change in that it is another way in which consideration for the planet, and the stars beyond it are not front of mind in our planning decisions.

2.2 Living sustainably

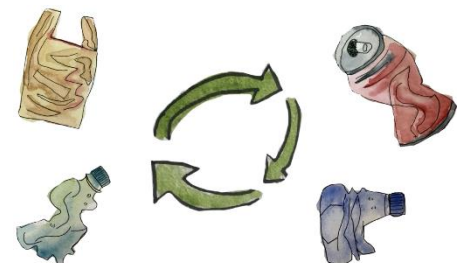
Let's live with, not against, the environment

A high level of interest was expressed in the dialogue for finding ways of living in harmony with the environment, finding a balance between human needs in relation to the needs of the planet. As such participants prioritise:

- Changing our approach to managing waste, moving away from a reliance on landfill to recycling, upcycling and taking a new approach to product design with biodegradable packaging and a focus on what could enhance rather than continue to harm the environment
- Addressing the problem of plastic waste
- Changing the food system, with a desire to empower individuals and communities to grow food; concerns about the negative impacts of intensive farming; a desire for nature friendly approaches to growing, producing and selling food; supporting local farming; and a structural change on food accessibility so that healthy food is affordable and available to all.

Managing waste

Many participants are exasperated by the amount of waste being generated around the world. Some are doubtful that a solution can be found.



“I get that people, us as humans, we create a lot of waste, there are lots of us, and we need to have a solution to things like it being littered. It's also that it then to the landfill, so then that's got more in it. I just don't get how, at this point, we can

solve these problems, bigger landfills aren't the answer."

Participants worry that landfill sites are running out. They discuss the fact that building more landfill sites is not the way forward, but they are unsure what the solution is to this problem.

"Landfills are running out, what are we going to do, you know, are we going to get more of them? You know, it's not the way forward, what are we going to do with all the waste that we produce?"

Many participants feel that landfill sites are unsightly and have a negative impact on the surroundings, describing them as an example of what makes them feel disconnected from the environment.

Participants hold equally strong feelings about littering, when rubbish is discarded in public spaces. It is something that deeply affects them, causing a sense of disconnection and sadness. They explain how it can impact on people's enjoyment of public spaces, such as parks, is a potential health hazard, and also impacts on nature.



"Biggest things that makes me disconnected is litter and dirt and the smell. You can take a walk down a road close by and it's just full of litter and bad smells. This is not going to connect you to your environment."

People worry about the state of green spaces, such as parks and waterways, and express concern that people do not clear away their rubbish. They reflect on how much these places mean to them, how they are places to be close to nature, to go for walks, to be with friends and family, and to relax at times of stress. They worry about the negative impact the accumulation of litter has on people's enjoyment of these spaces.

A number of participants express concern about the issue of fly-tipping, which they describe as an “eyesore” when large items are dumped along country lanes and within towns. They find it difficult to comprehend why people choose to fly-tip rather than going to a recycling centre.

“I took this on my way to work. In the foreground you can see something, and that's not a bench, that's a toilet that somebody has dumped. Right by Glastonbury Tor. People purposefully go on these quiet little back roads and lanes and dump large items like that. And it's a real eyesore instead of just taking it to a recycling plant, I never understand why they don't do that.”



Whilst littering is seen as a significant challenge, many participants feel that recycling is something that has improved over the last 5 to 10 years and that if this increased it might improve the litter situation. They comment that recycling infrastructure and services operated by the local government have improved making it easier for people to recycle.

“I think going back a bit, about 15 years, we never used to recycle so all of our bins, everything used to go in one bin and now we've got 4 different bins for the different types of materials, and I think as a family we've all just, kind of, changed the way we throw things into the bin.”

Participants generally feel positive about what they see in their communities, with more awareness of recycling and with potentially less material going to landfill. They are particularly encouraged by:

- Council led opportunities for separating out waste e.g., food waste, paper and cardboard, bottles, general waste
- Social pressure to recycle, describing feeling “the eyes on you” if you don’t segregate waste appropriately
- Children being taught to recycle at home and in schools, and the importance of doing so
- Having pride in being able to take positive steps in relation to waste and recycling and individuals and communities being more accountable.

These encouraging signs give participants hope that the science around reducing packaging and the positive impacts of recycling on the environment are being heard, and that the research is being done in the first place.

The plastic problem

Many participants are extremely concerned about the use of plastics within our products and our packaging. Their concern cuts across various environmental issues, including the impact on the natural environment, biodiversity, pollution and the urgency of addressing climate change. This concern extends to the high level of plastic pollution found in the seas, oceans and shores around the world.

“What I think of the environment, I think mostly of plastic pollution. Like, you know when you see beautiful coral reefs, like in Jamaica and the sea seems like a really pretty colour, and then you just see plastic. Like, plastic just in those areas. It’s disgusting.”

Participants are extremely worried about the impact of plastics in our seas, both the large pieces that are found on beaches and the microplastics found in the sea⁷. They are deeply worried about the impact plastics have on marine life and other animals. They express concern about the potential impact that could then have on human health as we consume fish that has ingested microplastics.

“In that clip they said that millions of microplastic things to the fishes, even what we are using, the plastic glasses or plastic cups and when we put them in the microwave, it really becomes-, the microplastics are going in our body and it's harming our health.”

Some participants describe the use of plastics as a “global challenge” because of how prevalent its use is and the fact that it doesn’t disintegrate. Many images were shared by participants about their concerns focused on this issue.



⁷ Participants were shown this clip of [Professor Tamara Galloway, University of Exeter](#) work to uncover the impacts of microplastics in the sea, winner of the NERC Impact Award, 2018

A focus for NERC and environmental science

Participants refer to a number of areas in which they are interested in research in relation to plastic waste. These are:

- Find ways to treat plastics beyond recycling
- Understand the long term effects of products that are derived from plastics, which can have a negative impact on humans, including the regulation needed to enable a shift away from these harmful products
- Investigate good alternatives to plastics, including materials sourced from natural and biodegradable products and which once they do biodegrade have the potential to benefit rather than harm the environment
- Science/ design collaborations to understand how products could be designed with the environment in mind, including in relation to how they are packaged.

Participants are calling for attention to be focused on designing and manufacturing products that minimise their impact on the environment and don't result in harmful waste. This includes participants' concern about the environmental impact of packaging, given the excessive amount that is used to present the products we buy such as consumer products bought online, and food bought in supermarkets.

Changing the food system

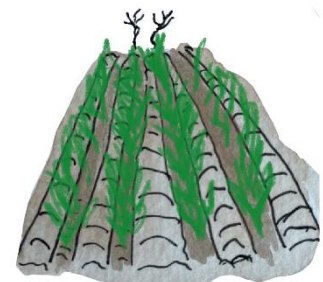
In the last workshop many participants wanted to focus on the food system and the impacts it has on human and planetary health. They raised:

- The importance of reconnecting people with where food comes from
- The challenge of industrialised farming techniques
- Tensions in relation to competing uses of our land
- A desire to eat more locally and seasonally
- The challenge of a food system which seems to deliver unhealthy rather than healthy food at affordable prices.

Participants express a strong desire for change. Many participants feel it is important to empower individuals and families to be more closely involved in understanding where their food comes from. They feel this can be achieved through **direct experiences of growing their own food** and through activities like foraging.

“Mine would be gardening, looking after plants, growing my own vegetables, and encouraging families to get into gardening, grow their own fruit and vegetables.”

Some participants explicitly want to see **a shift away from intensive farming**, including the use of pesticides and monoculture techniques, to more 'natural' farming practices. For example, they advocate for diversified crops, encouraging wildlife, and avoiding the use of pesticides. They feel the current system is not working well for humans or wildlife.



“The way we farm at the moment, you segregate different crops and use lots of genetically modified crops and lots of pesticides, it doesn't give good yields. If you farm in a more natural way, mix crops and you allow trees and shrubs to grow in the fields and it introduces more wildlife, flora and fauna, you don't use pesticides. That's a way forward that has big promise.”

Some participants express specific concern about the impact of pesticides on biodiversity and wildlife, such as bees. Some acknowledge that there is greater awareness about the negative impact of pesticides on the environment compared to the past. However, they feel more should be done. Others talk about the impact of intensive farming and fertilisers on soil health, resulting in soil degradation and desertification. They find this worrying.

“Mass industrialised farming uses fertilizers, and that negatively impacts the soil health and the nutrients of crops that grow in those soils. We see and just turning into deserts, and stuff, which is, yes, quite scary.”

They go on to reflect that having healthy soil will have a positive impact on crops and the environment, and our health, because they believe that all these factors are connected.

Many participants feel that there needs to be a greater emphasis on **supporting local farming and locally grown produce**, as opposed to importing food from other countries.

“I think we're not growing enough food here and for me that's a big problem. We need to grow more stuff here in our country and not have to buy it in.”

Some participants specifically worry about the **impact of importing food** on the environment and discuss how society has become accustomed to getting what it wants throughout the year. They comment that expectations have changed from eating with the seasons to having produce available all the year around, even items that would have been considered seasonal in the past, such as strawberries.

“Now we can have strawberries all year round, other fruits, other vegetables all year round, which is nice for

the diet and the palate. But think about the effect that is having on our planet.”

A few participants share their concerns for the lack of thought that has previously gone into land management. They consider that there is a **tension between using land for farming and using it for other purposes**, such as renewable energy schemes. Some describe it in terms of trade-offs and setting priorities, for example whether land should be prioritised for solar energy or not.

“What you said about things like solar panels or-, because then it becomes a question of priority doesn't it? Do we use this space for this thing or for that thing?”

Concern is expressed by some that renewable energy projects are potentially occupying land that could be needed for agriculture, both in the UK and from a global perspective. Some said they are supportive of wind farms, but not when they are situated on land which could be used for food production. They argue that a food crisis is looming, and that the UK needs to be self-sufficient. They are surprised to see wind turbines in agricultural land when there are other places that they feel would be more appropriate. In contrast to this perspective, other participants think that renewable energy projects, such as wind farms, should co-locate with agriculture, such as growing crops. They describe it as renewable energy projects integrating with nature.



Many participants **celebrate the growth in vegetarianism, veganism and more thoughtful meat consumption**, in recent years. They argue that such dietary changes are more focused on the environment.

“People are eating a lot less meat. Also veganism is a lot more popular and caring about the environment. It is a lot more popular compared to 5 years ago.”

A number of participants welcome there being more plant-based foods available with sections of supermarkets devoted to these foods. They argue that these products are more sustainable, given they're not using animals. They also welcome that many products provide information on their CO2 impact, which they find informative.

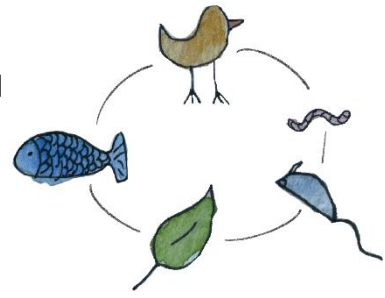
Many participants are worried that **healthy food is not affordable for people on low incomes**. Some participants reflect that even if healthy food is cheaper to buy, it can be too expensive for some people to cook because of the energy crisis.

“F: Do you not find that healthy food's more expensive?
F: ...They don't take into account the cost of [energy], so

it might be cheaper to buy it but then cook it for 40 minutes, that's cost you

2.3 Protecting biodiversity

Where are all the hedgehogs?



The health of the planet and all the species living on it is a high priority for participants.

- They want to ensure that humans have strong connections to their environment so that the inter-connected system of humans, wildlife, plants, air, water and soil is able to thrive. Concern is high amongst participants about species loss, and to ensure that precious and essential resources are preserved and enhanced.
- Changing human attitudes to plants and wildlife is essential for participants who believe that current understanding on this is low across society.

Connections to nature

Participants share experiences of times when they have felt connected to nature and reflect on its power and beauty. They emphasise how diverse nature is and give examples of their personal experiences of being struck by the beauty of nature.

“That rock pool is outside my dad's house in Portugal. I remember when I went, I was so surprised at the water being just so clear and seeing all the sea urchins and all the wildlife.”



Others contrast how connected they feel when they are in nature, with the disconnect of being surrounded by buildings. They describe the deep feeling of connection they have when out in nature seeing woods, mountains and plants.

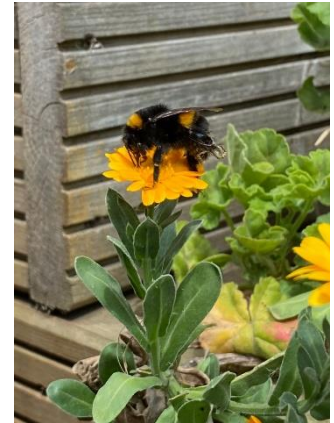
“What makes me feel connected is seeing something that isn't man-made so plants and mountains and things as opposed to, densely built-up skyscrapers and buildings that I know would be built up by humans. I think, for me, it's seeing creation, that's what connects me to the environment.”

Many participants talk about the connection and joy they experience when they see a variety of plants, animals and insects and reflect on the important role they play in the ecosystem, highlighting the need to protect them.



Many participants are in awe of insects and bees and the role they play in the environment. They talk fondly about their role in pollinating plants.

“I took this picture of a bee in my garden. I feel it's so small, yet it has such a major part in the environment. That's how, plants get grown as well. We get honey from it; we get so many resources just from such a small animal.”



When discussing the importance of the environment, participants emphasise the interconnectedness and interdependence of everything within it. They describe how species and habitats depend on each other for their survival.

“It is interesting how interconnected it all is. So, the birds depend upon the environment, we depend on the environment, nature depends on us and what we do to it.”

Participants share a number of examples of when nature feels inter-connected and balanced. This quotation is reflective of many such examples describing different species and plants work together.

“During the summertime, it's full of gooseberry and blackberry as well. For the gooseberry, the plant, actually providing the protection, home, and food for the animals around, like the rabbit and sometimes we will see the hare here as well. And for the animals, their droppings are actually feeding back to the plants, for them. I think this is the balance of the nature.”

The loss of our plants and wildlife

Many participants are worried about decline in the numbers and diversity of animals, birds and insects. Some have observed this in their local area, others remember seeing more and more diverse species when they were children, or they have heard or read about species decline in social and broadcast media. Participants ascribe this decline to:

- Climate change, including change in weather patterns
- Loss of habitats, including hedges, green space and trees



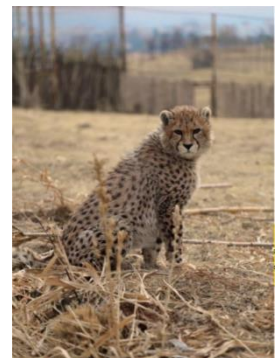
- Human activity, including intensive farming practices, a lack of prohibition on poaching and a lack of priority given to environmental protections.

“I see less wildlife around and about. Including just, like, less trees, less green land.”

“I've noticed a distinct reduction in the number and diversity of birds in my life. I mean, I can't remember the last time I saw a thrush. I can't remember the last time I heard a cuckoo. It's been over years, and that must be as a result of what we're doing.”

Another participant talks passionately about the extinction of the cheetah in Iran, known as Persian cats, which they discuss as a poignant reminder of the species that we are losing forever around the globe.

“This is a cheetah from Iran where I'm from. They are sometimes called Persian cats. This is one of the last ones. There were 3 of them. The other 2 died and then this one is being cared by the environmentalists in Iran. They have been killed, basically. People who care about them, like me, are very angry.”



A few participants describes the situation regarding biodiversity and species loss as the beginning of an extinction event. Some see this as having the potential to end with human extinction.

“I think that it is generally understood that we are beginning to see the start of a mass extinction. The loss of biodiversity and the loss of species is happening at an increasing and accelerating rate. We know about birds, we know about the various species, but actually we don't really understand that we're on that list too.”

The human response to diverse plants and wildlife needs to change

Participants believe that human attitude is a significant issue. They consider that insufficient care and thought is being given by society to protecting all species from harm and loss.

“Thinking snails, the snail especially how, basically, when we look around, many people see them as pests that destroy crops without looking at the benefits to our natural environment.”



Some participants have hope for the future and have seen improvements in their local area due to local and community initiatives. For example, one participant enthusiastically explains that in the last year hedgehogs have returned to their allotment.

A focus for NERC and environmental science

Participants believe that environmental science is focused on protecting and enhancing biodiversity, as well as research on species and habit loss but, as with other topics, they feel that more should be known about this work. They also propose a number of areas for research, whilst assuming that scientists are already working on these areas. They want to know that science is taking action to:

- Understand the short, medium and long-term impacts of climate change on biodiversity
- Understand the consequences of changing weather patterns, especially on insects, hibernating animals and, in the longer-term the implications for human life
- Develop ways of restoring habitats destroyed by increasingly common wildfires
- Provide the evidence for global collaborative action to address hunting and poaching of endangered species, particularly in the global south
- Research to address the impact of non-native invasive species on native plant and animal species.

“I'm on the committee of a local allotment group. I'm really pleased to see we're getting back to nature with hedgehogs, foxes and squirrels. The allotments took some action and we tried to stop people using the likes of slug pellets which were poisoning the hedgehogs and killing the birds, and so people are more aware now.”



2.4 The environment improving wellbeing and mental health

Breathing a sigh of relief

The significant impact, positive and negative, that the environment can have on physical and mental health and relationships is of great importance to participants. They believe:

- Being in nature is integral to mental health and wellbeing
- Negative impacts occur when people do not have access to the natural environment or live in areas with poor air quality
- Environmental science should play a stronger role in helping improve public understanding around the links between the environment and both physical and mental health.



Participants speak passionately about the value of interacting with nature, saying that it helps them to participants relax and destress. Exercising in nature was often described as being incredibly rewarding and enjoyable. Many speak about how for them interacting with nature is a way to ‘escape’ or slow down, particularly when they live in a town or city, and to find peace and quiet. Some participants speak about the therapeutic power of nature, for example referring to it as part of their treatment for depression or post-traumatic stress disorder. Others praise the increased recognition of green social prescribing to address key social determinants of health.

“It [nature] makes me feel really calm. I think, in a world where everything is just rush, rush, rush and it's just a rat run, I just feel like it gives you a few minutes' peace to allow you to think, collect your thoughts... I think, for me, it definitely gives me a breather.”

Participants speak extensively about how living in certain environments, particularly within cities with limited access to green spaces and areas with poor air quality, can negatively impact a person’s health. Concerns include the impact of poor environments on children and young people, on anxiety levels as well as on the incidence of asthma and cancer.

The topic of how the environment affects wellbeing and mental health is clearly emotive for many participants and led to some of the most impassioned and engaging discussions about the role that environmental science research should play. Participants themselves identify the theme of mental health and the environment as one that many of the public will relate to and connect with. Many said they are not aware of any research in this area, but saw the potential that research could have in demonstrating the benefits of preserving nature for human wellbeing and mental health and encouraging members of the public to interact with nature more.

“I would like to see more research on environmental science and how it links with mental health. It would be nice to know about what is it exactly in the environment that would affect our mental health in a positive way?”

A focus for NERC and environmental science

Participants suggested specific ideas for further environmental science research in this area. They saw this as a collaborative process expecting environmental science researchers to work in an inter-disciplinary with other researchers in relevant fields such as health.

What it is, so we can then go out and do more of it.”

2.5 Engagement and behaviour change

Let everyone know

Participants prioritise considerations around what might encourage or discourage people from changing their behaviour and help reduce the harmful effects of environmental change. These reflections come from a sense that climate change is an urgent and existential problem which needs collective action from individuals and communities, researchers, funders and policy makers. Participants prioritise:

- Education and awareness raising
- Encouraging diverse publics to interact with the environment, removing barriers to engagement
- Community and wider environmental action
- Government led environmental initiatives.



Participants argue that given the urgency of the current environmental situation and the need to engage a wide audience, **incorporating environmental science into the national curriculum in a comprehensive manner is essential** to influence environmental behaviours and encourage public interest and engagement in environmental science. Reasons given include:

- The perception that it is easier to influence the behaviours and attitudes of children, to cultivate passion and instil lifelong values around protecting the environment
- Changing the behaviours and attitudes of children is an effective way of influencing and encouraging their family members to also make positive changes
- The national curriculum is the only place where education about environmental sciences and environmental issues could be made compulsory, showing the priority place on environmental science as a topic in and of itself

- Educating children early on about environmental sciences will, they believe, help prepare and empower them to engage with and contribute to complex and nuanced discussions about climate change in different social and political spheres.

A focus for NERC and environmental science

Whilst participants understand that making the necessary changes to the national curriculum is not within the remit of NERC, they feel that NERC is well placed to advocate for such developments. In this context they also propose:

- NERC funded research that could demonstrate what the impact of centring environmental science in the curriculum could be
- Environmental scientists embedding work with schools in their research projects, for example through citizen science programmes or nature in school programmes
- Funding for grass roots and community organisations to work with school-age children on the importance of the environment to our lives.

A priority for participants is around understanding how environmental science research can reach wider audiences, engage the public, and influence change. Summarised below are some of the key ideas participants feel that NERC and environmental scientists could take forward. They propose the following considerations:

- Create a communications strategy that speaks to different audiences, levels of understanding, learning styles and interests.
- Information that is disseminated must be accessible and inclusive, avoiding complicated language, data and ideas.
- Key messages should be fun and engaging to capture people's attention using create tools and methods
- To encourage interest and action, participants call for relatable messaging. For example, participants have found messages in the dialogue powerful when they link local and global issues or connect communities.
- Some participants argue that to encourage individual action and engagement on environmental issues, messages should focus on how all of us are personally responsible and accountable for our actions.

“People who work in biodiversity understand the issues, they know the importance of it for the sake of the planet, but we need to sell it to people based on what's important to them, so if you're someone that's struggling for money, then say if you do this you can grow your own food and food becomes cheaper.

A focus for NERC and environmental science

Participants see NERC as being well placed to play an important role in developing and feeding into awareness raising about the environment. A key theme to emerge from discussions was that participants feel it is incredibly important for NERC to communicate key research findings to the public to help them understand both the causes and impacts of environmental damage.

Participants see the value in research being carried out in relation to environmental science to understand what messages in the past have significantly influenced human behaviour. They want to know what has:

- Has really caught people's attention in the past?
- Has motivated or encouraged individuals to change their behaviour?
- Can be drawn from this public dialogue in relation to key messages for NERC and environmental scientists?

Participants suggest that NERC could fund evaluations of certain dissemination or campaign projects attempting to engage the public about environmental research. The evaluations should seek to explore what kind of messages work for which audiences.

Translating it into something relevant for your audience.”

Many participants across the dialogue give numerous examples of how seeing members of their community working together has encouraged them to join in and make changes in their own lives. Several reasons were shared as to why this was such as:

- It feels less overwhelming and intimidating to join an existing group doing something good for the environment (as supposed to taking the initiative and figuring out what to do alone)
- Working together brings a sense of belonging and fulfilment, and
- Is a way to make friends and combat feelings of isolation and loneliness.

“There's a project in our area... where they're doing some work on the canal, so I actively got involved on Thursdays. We getting together as a group, and cleaning

up a side of the canal, and creating a young people's area. I look forward to it every Thursday. When you start looking at things that are going on, and getting involved in stuff it fulfils you.”

A key theme to emerge from discussions was that community wide shifts in attitudes and behaviours towards the environment tend to stem from bottom-up activities. Community led action is seen to gain more momentum and is more sustainable over time. Participants explain this is as encouraging feelings of pride and ownership over the changes being made. Participants also argue that it makes most sense for environmental initiatives at a local level to be led by local communities themselves. They are the experts in their local area, they understand the needs of their local community, and they will be the ones there for years to come.

A focus for NERC and environmental science

Questions were raised around what role NERC could play in supporting community led environmental initiatives to take part in environmental science research. Whilst participants are unclear of what this might look like, they feel that local communities could add a lot of value to research including as:

- Citizen scientists
- Participants in studies about behaviour change
- Evaluators of the impact of NERC funded science on local communities
- Other areas where a collaboration between researchers and community members would add value.

They wonder if NERC could help train, build capacity and provide local communities with the necessary funding and resources to contribute to environmental science research.

Participants believe that another key enabler for behaviour change is government investment in, and support for, environmental initiatives which provide members of the public with an incentive to get involved. Example of such initiatives raised by participants are:

- Financial support to buy solar panels
- Legislation that encourages people to recycle, return bottles, or bring their own bags to the supermarket.

Participants argue that whilst initiatives like this can initially feel annoying, they soon help to develop societal habits that become second nature.

A focus for NERC and environmental science

Participants do not see a role for NERC in advocating action to government. But they do see an important role for both NERC, and the research it funds, to provide the evidence of the climate crisis, the need for behaviour change to help address it, and to understand what solutions might work best.

NERC funding and advocating for the highest standards of research is an important role for participants. Many also feel that NERC's work around the world is incredibly valuable in providing context for UK science. They encourage NERC to continue this work worldwide to gather good practice on environmental initiatives and provide recommendations most relevant to the UK context.

2.6 Social justice and equity

Make it fair for everyone



Participants are concerned that it could be perceived that the environment is an unequal space where those from underrepresented communities are harmed by an unequal system. They characterise the challenge as people living in cities not having access to green space; and there being systemic barriers to entering the environmental science profession; or being involved in environmental projects within communities. They are concerned by:

- New, ill thought out, housing developments
- Global inequalities with communities most at risk of climate change being the least supported to mitigate against it
- A perceived lack of accountability from large corporations and governments which seem to be failing to meet net zero obligations or taking real steps to work more sustainably in tune with the planet's needs

A common perception is that direct interaction and connection with nature on a regular basis encourages people to think about the environment and consider what they personally can do to help protect it. Participants feel strongly that unequal access to nature is an issue that needs to be discussed in this context. The lack of access to nature for those living in large cities, as opposed to those living in the countryside or in rural villages and towns, was commonly highlighted. However, unequal access to nature is not just about where you live. Participants argue that it is also about:

- Having the time alongside work and caring commitments
- Having the money and access to appropriate transport
- Being able to afford a home with a garden or an allotment space
- Having access to safe and clean public parks
- There being enough public footpaths.

All these areas are seen as being inextricably linked to issues around poverty, the cost-of-living crisis, and racial inequality. For example, participants noted people

from communities experiencing racial inequalities tend to live in, or on the edge of, major urban settings.

“What do you expect? We all live in the city, or in the miserable edges of it. If you are Black or come from a heritage that isn’t White British, you don’t get green spaces, your only connection to nature is looking up to the sky.”

Participants feel that having easy access to nature is a right all people should have. They also feel such access is an important step towards encouraging people to feel more connected to nature, develop a sense of ownership over the environment and take a more active role and interest in protecting it.

A key concern in relation to the environment is urban development. Participants spoke about green spaces frequently being replaced with new housing developments. Examples were shared where these new housing developments are leading to new environmental problems, like increased flooding due to new constructions preventing the ground from absorbing rainwater as it did before. Despite this, participants acknowledge the existing tension between an ever-growing housing crisis and the need for affordable homes with the destruction of green spaces. Participants recognise the need for more housing stock and are not arguing that urban development cease altogether. Instead, they want to see research take place that focuses on how to develop more sustainable and environmentally friendly housing developments, which work for communities.

Participants strongly feel that environmental science and efforts to protect the environment must take a global collaborative approach, with all countries pulling in the same direction rather than working at cross purposes. However, participants repeatedly reflect on the nuanced complexities of this happening in practice. Several challenges that participants perceive to global collaboration are highlighted:

- The largest contributors of CO2 emissions are often not willing to make meaningful commitments to decrease their emissions
- The countries causing the most damage to the environment tend not to be the same countries that are most affected by climate change
- It feels controversial and hypocritical to ask countries which are experiencing rapid industrialisation to hold back, because doing so would hinder their economic growth as they seek parity with more developed economies.
- It is important to question existing narratives around which countries are most to blame for climate change and to seek a more nuanced understanding of what progress different countries have made to become more environmentally sustainable. The example of India was given, which is one the largest contributors of CO2 emissions, yet at the same time is decades ahead in relation to EVs.

“I think that's the fundamental question of this century, you know, because it's essentially environmental imperialism. The rich white people are telling the developing brown people what they can and cannot do, despite us having feathered our beds for the past

A focus for NERC and environmental science

Participants see a role for NERC and environmental science in helping push for the development of green spaces in urban areas, as well as the protection of existing green spaces. They want environmental science to play a role in:

- Developing innovative solutions for how green spaces could coexist and thrive in urban areas
- Creating green spaces in urban areas that feel natural, accessible and usable for everyone – spaces which will actually invite the public to use and interact with nature
- Demonstrating the value to society of creating more green spaces in urban areas – for example in savings for public health and the NHS
- Highlighting the impact that living in urban areas without access to nature and green spaces has on wellbeing or access to different activities and opportunities.

Participants also want to see environmental science research which informs:

- Support for the development of infrastructure and buildings that are harmonious with the environment and help increase biodiversity
- New more environmentally sustainable building materials that might also help new builds be more resistant to extreme weather conditions
- The development of more innovative and sustainable ways to heat and cool homes
- The development of more affordable and practical ways for homes to use renewable energy and become carbon neutral
- The development of new housing developments that help address other key environmental issues, such as flooding
- Finding ways to repair and maintain old buildings in order to make them more environmentally friendly and prevent the same need for new builds

century.”

One of the key themes to emerge from discussions is a perceived need to focus on the accountability and responsibility of large corporations and governments, rather than focusing on the actions of individuals. Participants frequently refer to how the activities of large corporations, and their impact on the environment, makes the actions of individuals insignificant. Some participants feel that the focus on individual behaviours and actions is simply a tactic to divert attention from the companies whose activities lead to the most environmental damage, and the majority of the world's greenhouse emissions, as well as governments not intervening and holding those companies to account, enforcing meaningful change.

“If you don't litter, and you bring your own plastic bags to the supermarket, and you're turning water and lights off, what more are you supposed to do as an individual? Because we're not the big companies that are causing the majority of the pollution.”

Participants frequently suggest that a lot of valuable environmental science research is already taking place, but that many governments are not listening or choosing to ignore the findings. There is some disillusionment around what role environmental science research could play in meaningfully influencing the policy and practice of governments and large corporations. However, many still felt that environmental

A focus for NERC and environmental science

In response to these discussions, participants are keen to understand what role environmental science research could play in helping secure global environmental social justice. It was strongly felt that principles around equity, equality and need should be integral to the objectives of environmental science research. Participants argue that environmental science should play a key role in understanding and highlighting the environmental impact that the economic activities of the richest countries in the world has on poorer countries.

Participants make various suggestions for environmental science research to work with large corporations and governments, including to :

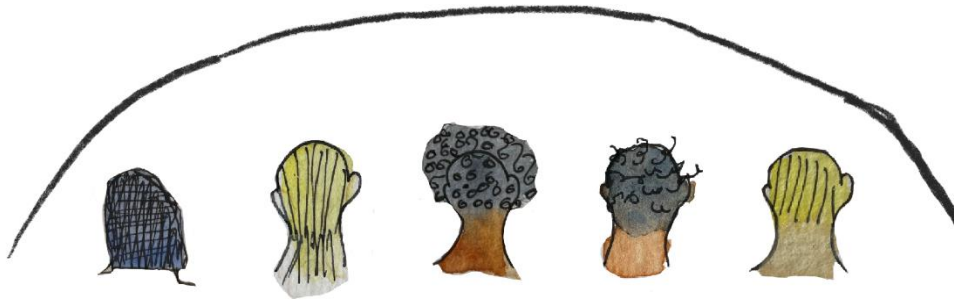
- Illustrate the negative impacts that some activities by large corporations have on the environment, as well as to demonstrate the positive impacts of good practice
- Demonstrate, through evidence, the impact that government regulation and legislation around the world can have on corporate activity and consequently on the environment
- Focus on conducting research and developing recommendations that encourage government economic and financial modelling to take environmental degradation into consideration.
- Carry out cost benefit analysis that demonstrates how governments and corporations can save money through environmentally friendly initiatives
- Focus on developing technology and identifying different materials and processes that enable big and small business to adopt practices that are better for the environment but remain profitable and/ or lead to savings
- Liaise with large corporations and advocate scientific research funding and collaboration to inform their practice.

In addition participants are interested in seeing NERC funded research focused on making environmentally friendly options more affordable. A key example was around environmental science helping to develop more cost-effective ways for homes and community organisations to generate renewable energy.

Participants also feel that environmental science has a role to play in increasing societal understanding of how the impacts of climate change can negatively impact the communities at most risk from social and economic hardship.

science had a significant role to play in helping ensure governments and corporations take responsibility.

3. Key considerations for stakeholder groups



Participants feel that publics should be given the opportunity to feed into environmental science research on an ongoing basis. The term citizen science is often mentioned by participants in this context, but they want to go beyond counting and monitoring and to be more deeply and actively involved in research. They believe that environmental science should capture the views, concerns and lived experiences of individuals and communities, with a particular focus on communities negatively impacted by environmental issues and marginalised and under-represented groups in society. This is not just about being inclusive, although that is important. Participants feel that communities around the UK have a lot of knowledge, experience and insight that could help shape environmental science, and demonstrate what the most urgent issues and impacts of climate change and environmental damage are for local areas and people. As a result of the dialogue discussions, participants identify key considerations for four stakeholder groups.

3.1 Considerations for people across society

Public dialogue participants urge everyone in society to take all the opportunities available to think about their role in relation to the environment. This doesn't mean being responsible as individuals for solving climate change or restoring biodiversity, it means being responsible for those things which will bring benefits to you as well as benefits to the environment. These include:

- Consider yourself as part of a system, the environment, and know that your voice matters on environmental issues
- Be in nature, enjoy the benefits this brings for physical and mental health
- Take the time to understand the nature around us, and take this further by contributing to citizen science projects to monitor what is happening to our seasons, and our plant, bird and wildlife
- Be aware of sustainability issues and the steps that can be taken by individuals to be responsible for the environment such as:
 - Recycling and upcycling
 - Being careful about how you travel, the products you buy and the food you eat and where these products and foods are sourced
 - Getting involved in local community projects such as litter picking and community growing
- Take advantage of the support available to live sustainably, and where it doesn't exist, campaign for change, or support community groups that are campaigning for change.

3.2 Considerations for environmental scientists

Participants are excited about the opportunities environmental science affords. They feel that more needs to be done to raise awareness of the science, its wide-ranging applications, and the importance of the evidence it provides to creating sustainable systems. Participants call for environmental scientists to:

- Think about how your research could be enhanced with co-design approaches involving people and communities across society
- As such, embed co-design principles in your work
- Raise awareness of the opportunities for careers in environmental science, making it clear that this is a career for many people, with diverse and interesting roles across many disciplines
- Create communication strategies which are targeted at publics and policy makers as much as specialist environmental science audiences. This could include advocating for environmental science and its essential role in, for example:
 - Combatting climate change
 - Creating innovation in how we live sustainably
 - Ensuring ongoing biodiversity loss is prevented.
- Use accessible tools such as video, animations, theatre and other creative formats to share key messages – this could involve inter-disciplinary working e.g., scientists working with artists or theatre performers.

3.3 Considerations for policy makers

Participants are anxious about climate change and its impacts; they are disappointed to hear about the extent of biodiversity loss and want to know that urgent action is being taken at a policy level. As such they call for:

- Evidence from environmental science to continue to visibly inform policies in all relevant areas such as:
 - Achieving net zero targets
 - Supporting, through grants, policies and legislation, the building of housing developments which are in harmony with the environment
 - Food system change, to make healthy, seasonal food affordable and accessible to everyone.
- Communicate to publics when and how such evidence has informed policy
- A process to create fair routes to net zero which acknowledge differences in circumstances for example between communities within the UK and worldwide; recognise that countries in the global south, for example, are not in the same position as the UK and as such the UK should demonstrate leadership on this issue
- Use citizen voices to inform environmental policy, building on this public dialogue to test what is acceptable to individuals and communities as they strive to be included in decisions about the environment and environmental science.
- Create the conditions for the work and products of industry and corporations to be routinely informed by environmental science evidence, using the value added by the evidence to bring benefits to shareholders, stakeholders and society

- Consider corporate legislation and regulation to ensure the environment is put at the centre of policy and practice, including product development and sales
- Above all make policy decisions for the long-term wellbeing of the people and the planet.

3.4 Considerations for NERC

The dialogue process including online and in-person workshops, and a co-design approach so that discussions were participant led, meant the passion participants expressed for the environment, the health of the planet and everything that lives on it was fully exposed. Participants acknowledge the important work that NERC is doing to fund and promote environmental science. They want more people across society to know about this funding, and what it means for highly significant environmental science research projects. Participants place a very high priority on using environmental science to inform how society responds to climate change and biodiversity loss. As such participants call for NERC to:

- Establish a panel, comprising the constituent parts of the public dialogue, to review and collate the proposals in this report and develop a programme which sits within and alongside NERC strategic delivery plans⁸
- Fund initiatives which empower communities to be involved in environmental science and action to mitigate against climate change and biodiversity loss. Such initiatives might include:
 - A community fund to support the use of environmental science research to inform the most efficient/ affordable ways for communities to generate renewable energy
 - Fund cost/ benefit analysis to understand how best to support disadvantaged communities to make greener choices and transition to lifestyles which value the environment
- As NERC has already done in this dialogue, put the voices of diverse publics on an equal footing with environmental scientists and NERC team members when decisions are made on NERC funding streams, strategies and future ambitions for environmental science research. This could include:
 - An **annual Open Space Forum**, modelled on the final in person workshop for this dialogue where public participants, NERC team members and environmental scientists can come together to agree priority research topics and themes, as well as reviewing progress on involving communities in environmental science research
 - Include in **guidance to applicants for NERC funding a flexible requirement that, where possible and relevant, publics should be part of the co-design of research projects**, and be embedded in the full research cycle e.g., as project managers; workshop designers; as data gatherers; research participants and collaborators; and as evaluators/ monitors of research projects.
 - Include **public participants in grant review processes**, using, for example the PPIE (Patient and Public Involvement and Engagement) model⁹ within the NHS to give the lay voice a role in deciding which projects should be taken forward. This is of particular interest to

⁸ <https://www.ukri.org/wp-content/uploads/2022/09/NERC020922-StrategicDeliveryPlan2022.pdf>

⁹ <https://www.england.nhs.uk/wp-content/uploads/2017/04/ppp-policy.pdf>

participants from communities experiencing racial inequalities, who feel they have not been represented in these decisions previously

- Take steps to **create the conditions for more diverse publics to be trained in STEM subjects and given clear opportunities and pathways into an environmental science career**
- Provide funding for **community and grassroots organisations to develop their own environmental science projects**. Embed opportunities within that for a partnership to develop between environmental science researchers and communities. This could take the form of a **buddying or collaborative shared space**, where partnerships could be formed of like-minded, but differently focused partnerships.

Above all participants see themselves as deeply connected to the work of environmental science and want to know they can be involved in decisions about the future of the planet. An appreciation of the concept behind this dialogue, that NERC puts co-design at the heart of engagement, and that it wants to hear and understand public priorities for environmental science, has been very important to participants. They feel, as a result of taking part in several months of deliberation that their voice has been heard and NERC will take action as a result.

“What’s exciting is that NERC seems to be listening and responding to what we think is important and taking account of what we say. That’s rare and special.”

Participants who have been through this dialogue are passionate about and committed to environmental science. From the beginning of the process they raised topics and led discussions, informed by NERC evidence, that show the environment as a whole matters. As such their overall priority is ensuring that the science informs change which will enable us all to live sustainably protecting our most precious resource – the Earth and all living things dependent on it.

“I’m so glad I did this. We’ve all been empowered – and I want to keep thinking about what to do with that. We as individuals and in our communities can be really useful here and I hope we continue to be given opportunities to do that.”



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