Public dialogue on advanced nuclear technologies

MAY 2022

Department for Business, Energy, and Industrial Strategy

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SUMMARY OF FINDINGS

Version Control

Document information	
Client	Department for Business, Energy, and Industrial Strategy
Company	Traverse
Title	Public dialogue on advanced nuclear technologies
Subtitle	Engagement report summary
Dates	19/05/2022
Status	Released
Classification	Open
Project Code	11208
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Contents

Traverse

We are an independent social-purpose consultancy that supports better decision making through the power of inclusion.

Traverse at a glance

Employee owned – established in 1989

UK's first employee-owned 'public interest' company

60 team members

London HQ with international reach

As a living wage employer, CSR is the fabric of our work

Commitment to social value runs through everything we do

Values

Inclusive: we create space to include everyone's voices

Curious: we listen, investigate, and search for insight

Compassionate: we prioritise empathy and understanding

Independent: we provide an independent perspective to challenge assumptions

How the process worked: Design and method

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How the process worked

The Department for Business, Energy & Industrial Strategy **(BEIS) and its partners commissioned Traverse to deliver a public dialogue to explore** public views toward the use and siting of **advanced nuclear technologies**.

The findings will support policy development and inform future engagement.

Department for Business, Energy & Industrial Strategy

Environment Agency

NIRO Nuclear Innovation and Research Office

Cyfoeth Naturiol Cymru Natural Resources Wales

ONR Office for Nuclear Regulation

sciencewise

UKRI

Llywodraeth Cymru Welsh Government

National Nuclear Laboratory

What we hoped to find out

What are participants' perceptions, hopes and concerns about the development and use of advanced nuclear technologies?

What influences those views of advanced nuclear technologies and, given that, what might make participants more or less open to the use of them?

What do participants think is important when considering how advanced nuclear technologies might be sited and how to use advanced nuclear technologies?

How the process worked

Traverse approach to deliberative dialogue

Long-form and reflective

Usually held over a number of hours, and sessions (not just a one-off)

A learning experience concerned with evidence

Providing balanced information on a topic to participants, introducing them to specialists to talk through the topic and answer their questions

Involves a diversity of voices

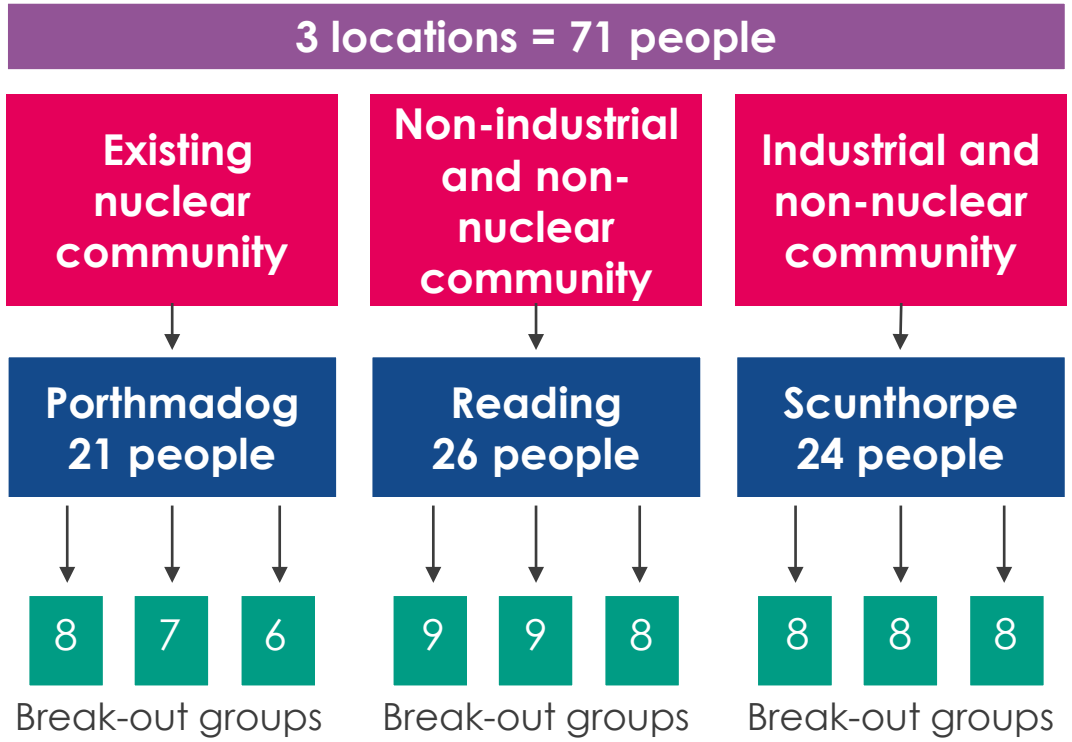
People from all different backgrounds are specifically invited to participate

Embraces complexity while exploring consensus

Searching for the "why" behind views, problematising the topic, exploring areas of agreement and disagreement

How the process worked

Locations and participants



- Participants were recruited from Porthmadog, Reading and Scunthorpe.
- Locations were chosen based on proximity to current nuclear infrastructure and other industries.
  - No locations were chosen based on consideration for future siting and deployment of advanced nuclear technologies.
- The mix of participants was designed to broadly reflect the UK population.

How the process worked

The dialogue

Fully online

The dialogue was delivered entirely online, due to **Covid-19** restrictions.

Workshops were held on **Zoom**.

Participants completed **online tasks**, such as journals and surveys, on an engagement platform **Recollective.**

What happened in the sessions

Participants attended **6 workshops over 6 weeks** between January and February 2021.

They listened to **specialist presentations** with opportunities to **ask questions** and discuss further.

They engaged in live group **discussions**, and interacted outside of sessions via Recollective.

How the process worked

Engagement journey

Workshops and activities were grouped into 3 themes

Big picture of energy

Plenary | Online tasks | Group discussion | Online tasks

Introduction to the **energy landscape in the UK**.

Specialist presentations and Q&A.

Group discussions about the UK energy landscape, net zero, and perceptions of nuclear.

Big picture of nuclear

Plenary | Online tasks | Group discussion | Online tasks

Introduction to **nuclear energy and regulations**.

Specialist presentations and Q&A.

Community perspective from a Councillor of a nuclear community.

Specialist discussions in groups.

Advanced nuclear technologies

Plenary | Online tasks | Plenary & groups

Introduction to **use and siting of advanced nuclear technologies**.

Specialist presentations and Q&A.

Group discussions about the use and siting of advanced nuclear technologies.

Findings:
The big picture of energy

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Findings: The big picture of energy

The UK energy landscape

Making sense of energy and electricity

- Initially, participants often used '**energy**' and '**electricity**' interchangeably, but this was **not a barrier** to sharing their hopes and concerns about advanced nuclear technology.

Impact on households vs impact on the environment

- Participants initially focused on the **impact of energy and future energy on individuals**, focussing more on minimising impacts on the **environment** as the dialogue progressed.

A consistent preference for renewable energy

- Participants were surprised to learn the **scale of renewables** in the UK's electricity mix.
- They had greater previous awareness of renewables than nuclear energy, and generally **preferred renewables to nuclear.**

Findings: The big picture of energy

Net zero targets and ambitions

The complexity of net zero and a roadmap to 2050

- Participants had heard of the net zero target, but **not reflected** on what it meant for them as individuals or for the UK energy system prior to the dialogue.
- They highlighted the **complexity** of the pathway to net zero.
- Some participants were interested in **non-nuclear pathways to net zero**.

Net zero as a global issue

- Participants felt net zero was an issue that needed to be addressed **globally**.
- They worried that efforts to develop new technologies in the UK would not help combat climate change if other countries did not support similar goals.

Findings: The big picture of energy

The need case for nuclear energy

Nuclear energy and its role of achieving net zero

- Participant views on using new nuclear to meet net zero by 2050, were **complex and nuanced**.
- Most **understood the presented need case** for a reliable low-carbon energy source to meet net zero, but support for nuclear was always **qualified** with concerns and questions.

Using advanced nuclear technologies to achieve net zero

- Cautious optimism about advanced nuclear was often **qualified** with questions and concerns.
- Many participants questioned the **unknowns** of the new technologies, which might have made them hesitant to give firm opinions.
- Most participants felt the UK should use a **mix of low carbon energy sources, with renewables dominating**, and wanted resources to be allocated instead to developing renewables.

Findings:
Hopes and concerns

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Findings: Hopes and concerns

This chapter explores participants' hopes and concerns, in order of frequency and strength of views. This means that issues participants felt most strongly about appear first.

- Nuclear waste storage and disposal
- Safety and security of sites and materials
- Impacts on local environments
- Economics of new reactors and sites
- Efficiency and reliability of nuclear energy
- Reactor and site size
- Creating and delivering job opportunities
- Decision-making and public engagement

Findings: Hopes and concerns

Nuclear waste storage and disposal

- Concerns centred around **immediate and long-term impacts of nuclear waste** storage and disposal, particularly **environmental and health** impacts on local areas and people.
- Most participants were concerned that a **permanent disposal solution was not yet in place**, and the potential **impacts for future generations**. They felt this should be addressed before investing further in nuclear energy.

Findings: Hopes and concerns

Safety and security of nuclear sites and materials

- **Safety** was very important to most participants – concerns centred around the possibility of **large-scale accidents** causing major harm to **people and the environment**.
- Some were concerned about safety risks associated with the **supply chain**.
- Some were worried that living or working near nuclear sites might pose **health risks**.

Regulation of nuclear industry and sites

- Discussions about regulation in week 3 lessened many of the concerns raised by participants, but **safety remained a priority** for almost all participants throughout the dialogue.
- Some participants were **not confident** that regulation would, or could, be effective enough to guarantee safety.

Findings: Hopes and concerns

Impacts on local environments

- **Environmental** hopes and concerns were raised in many discussions throughout the dialogue.
- Most participants were concerned that nuclear sites or waste management facilities might **damage local environments, harm or contaminate wildlife, ecosystems, and waterways**.
- The involvement of **environmental agencies** in regulation reassured some participants.
- Some were hopeful that nuclear energy development would lead to **lower carbon emissions**, helping to address climate change.

Findings: Hopes and concerns

The economics of new reactors and sites

Funding of new reactors and sites

- Concerns around **who would fund new reactors** and sites were raised regularly, with some related concerns that those **funding the industry** would hold the most sway in decision-making.

Costs of nuclear energy

- Some participants focused on possible **costs to the consumer**, feeling these should be minimal.
- Some considered nuclear energy to be **expensive** in comparison to renewables.
- A few discussed the impact **high costs** might have on the development process.
- Some expressed **distrust in private energy companies**.

Findings: Hopes and concerns

The economics of new reactors and sites

Nuclear energy and international relations

- Economic considerations of **nuclear energy and international relations** were raised in a variety of ways.
- Some participants expressed a desire for **self-sufficiency in the UK**, while some hoped the UK might be able to **lead the way** in developing this technology.

Findings: Hopes and concerns

Efficiency and reliability of nuclear energy

- Most participants thought of nuclear energy as **relatively efficient**, and some were hopeful that other applications of advanced nuclear technology would be useful.
- Some **concerns about efficiency and reliability**, such as the perceived short operational lifespan of nuclear reactors.

Reactor and site size

- Most participants worried that advanced nuclear reactors and sites would still be **too big**.
- They were clear that future nuclear sites should not take up much green space or countryside.
- Some balanced this with the view that the technology should still produce enough electricity to be worthwhile.

Findings: Hopes and concerns

Creating and delivering job opportunities

- Most participants hoped nuclear development would create **new job opportunities in high unemployment areas**.
- They felt that communities accommodating nuclear sites should benefit from the opportunities.

Decision-making and public engagement

- Most participants talked about the **importance of public engagement**, they wanted
  - to be involved in decisions about their communities from the start
  - information to include alternative energy sources and opposing views
- Most participants wanted to understand decision-making processes of nuclear development, concerned about how they might work, and who might have influence.
- Some worried that decisions had been made and that public views would not be considered.

Findings:
Use and siting

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Findings: Siting and deployment

This chapter explores views on considerations for siting and deployment of advanced nuclear technologies, building on views on the energy landscape, commitment to net zero, and hopes and concerns.

This chapter is not strictly in order of frequency and strength of views.

- Nuclear as part of a mixed energy system
- Prioritising safety in the UK and abroad
- Minimising environmental impacts
- Prioritising waste management planning
- Maximising local benefits and opportunities
- Siting on existing or decommissioned nuclear sites
- Proximity to residential areas and industry
- Maximising additional opportunities and new uses
- Public communication and engagement

Findings: Siting and deployment

Nuclear as part of a mixed energy system, with renewables dominating

- Most participants felt strongly that the UK should explore **other options for lower-carbon energy** in depth, before committing to use of advanced nuclear technologies.

Prioritising safety in the UK and abroad

- Safety was paramount.
- Majority of participants found it difficult to balance safety against other potential benefits of advanced nuclear technologies.
- Independent of reactor type, most participants agreed that **all safety risks needed to be considered** prior to any decision-making on use and siting of advanced nuclear technology.

Findings: Siting and deployment

Minimising environmental impacts

- Most participants wanted to be reassured that use and siting of advanced nuclear technology would have **little to no negative impact on the environment**.
- Minimising impact on environment was a key consideration that could not be traded off.

Prioritising waste management planning and geological disposal facilities

- Most participants want to be sure that nuclear waste **storage and disposal poses no long-term risks**, before any decisions are made about the use and siting of advanced nuclear.
- Most prioritised long-term thinking around risks over immediate benefits.

Findings: Siting and deployment

Maximising local benefits and opportunities

- Most participants emphasised that local contexts must be investigated in decision-making processes to ensure maximum benefits and opportunities.

Siting on existing or decommissioned nuclear sites versus new sites

- Most participants were more open to siting new nuclear technology at existing or decommissioned sites due to convenience and **reduced disruption and impact**.
- Some participants valued the opportunity to make use of **existing workforces** and maintain use of sites which may not be suitable for other activities.

Findings: Siting and deployment

Proximity to residential areas and industry

- Discussions on use and siting of advanced nuclear technology in proximity of residential areas and industry were particularly **complex**.
- Some participants could see the benefits of **potential new outputs** from advanced nuclear technologies, but they were often outweighed by concerns around safety and local impact.
- A few participants were less hesitant to explore siting advanced nuclear technologies in proximity of residential areas and industry, as compared to untouched countryside.
- Participants felt strongly that some sort of **distance to residential areas** should remain and densely populated areas should be avoided.

Findings: Siting and deployment

Maximising additional opportunities and new uses

- **Wider uses** of advanced modular reactors played a **key role** in some participant discussions on siting and deployment in new areas.
- Some participants balanced benefits of increased use of outputs, with concerns around siting too close to communities. They rarely felt like a clear trade off could be made.

Public communication and engagement

- A majority of participants felt strongly that **rigorous public communication and engagement** was key to any future decision-making on advanced nuclear. They wanted any communication and engagement with the public to be **inclusive, transparent, and balanced**, with demonstrable impact on policy-making.

Findings:
Participant journey

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Findings: Participant journey

Participants views change

In a deliberative dialogue, participants can learn, reflect on a topic, and interact with different opinions.

As a result, **participants' views might change** throughout the dialogue.

We identified three types of journeys

Participants who had concerns about nuclear and grew more concerned on learning about advanced nuclear

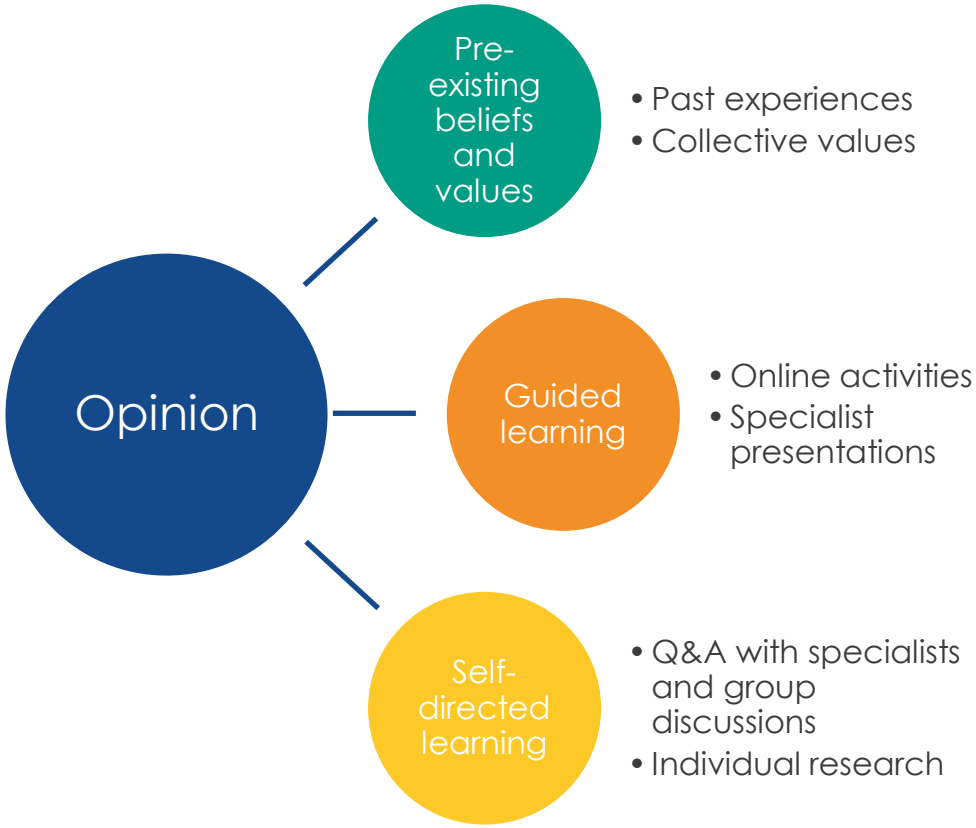
Participants who felt cautiously optimistic about advanced nuclear, but requested more detailed information

Participants who had a more positive view of advanced nuclear and trusted the experts with the details

Findings: Participant journey

How participants formed their opinions

- For some, the learning process focused more on understanding the **technology**.
  - They sought detailed information about advanced nuclear as it helped them understand how it aligned with their values and previous opinions.
- Some others were more focused on **trust**.
  - They used the process to assess whether they could trust the information presented, institutions involved, or experts' opinions.



Conclusions

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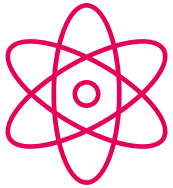
Conclusions

Views were complex and nuanced



Participants were surprised that nuclear energy is being considered as part of the approach to achieve net zero

Concerns and questions outweighed hopes

Conclusions

Caveated support for use and siting of advanced nuclear

- A robust **need case** must be proven
- **Renewable energy** should be central to achieving net zero
- **Health and safety** must be prioritised
- It should not present **long-term risks** or leave a negative legacy
- Robust and independent **regulation** is key

Conclusions

Siting considerations

Proximity must ensure safety of local communities

Prioritise environmental impacts

Make the most of existing sites and infrastructure

Optimise for benefits and alternative uses

Public engagement is essential

2022 reflections

Reflecting on projects in the wider energy landscape

- Concern over cost
- Fairness
- Some mistrust
- Call for trusted decarbonisation advice
- Continued desire to act on climate change

For more see: 5 things about climate and net zero that matter to the public, our reflections and predictions for 2022.

Thank you

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