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With thanks to Sarah Macmillian from University of Birmingham.

Creating and sustaining a diverse and inclusive Hydrogen Economy.

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Today's session

Today's **aim** is to enable you think critically about all aspects of EDI and relate this to hydrogen economy.

Definitions – what do we mean by ED&I?

Why is ED&I important?

Scenarios

Conclusions and next steps

Opening reflection



- Why is it important to consider EDI in your research planning, proposals and delivery, and/or business practice?



Protected characteristics

It is illegal to discriminate against anyone because of a [protected characteristic](#).

age

being married or in a civil partnership

being pregnant or on maternity leave

disability

gender reassignment

race including colour, nationality, ethnic or national origin

religion or belief

sex

sexual orientation

Equality / Equity



Equality

- Treating everyone the same and giving everyone access to the same opportunities.

Equity

- Creating fair access, opportunity and advancement for people from under-represented groups.

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Diversity



- [**Recognising** and **valuing**] Individual differences between groups based on: abilities, age, disability, learning styles, life experiences, neurodiversity, race or ethnicity, class, gender, sexual orientation, country of origin, cultural political or religious affiliation [and/or] any other difference that exists.

Inclusion



- The **process** of bringing people that are traditionally excluded into decision-making processes, activities or positions of power. It enables individuals or groups to feel safe, respected, motivated and engaged.

Why does this matter for research?



- Where do you think these mission statements come from?
 1. “Together, we will make the world more open, more sustainable, and more equal”.
 2. “...to encourage the development and use of science for the benefit of **humanity**”.
 3. “...to advance and promote excellence in engineering for the benefit of **society**”.
- **Equal, diverse and inclusive environments** foster exciting, innovative and relevant research. There is both a moral imperative not to exclude anyone from participating in or benefitting from research, as well as practical considerations around funder expectations.

Example funder requirements



- “Innovate UK is encouraging businesses to consider diversity and inclusion in their approach to innovation. This includes ensuring that new products, processes, technologies and services are designed at the outset with diversity, and diverse users, in mind. We want to see more innovations developed with improvements in equality, diversity, and inclusion as a goal, resulting in a higher chance of commercial success whilst delivering benefits to all parts of society.”
(Innovate UK)
- “Equality, diversity and inclusion (EDI) is a critical aspect of a healthy research culture – from how it’s designed, how it’s carried out and who is involved”
(UKRI)

Scenario 1



Hydrogen-powered refrigerated vehicles project

- You are planning to work with an industry partner to help shape the design of hydrogen-powered refrigerated vehicles. You intend to employ a postdoctoral research fellow who will spend half their time in industry. How would EDI considerations affect the process of recruiting for this position and the PDRF's ongoing career development?
- Always ask yourself '**how**' you will address an issue or implement change. Recognising a need is the first step but this should be followed with the intention to act on it.

Scenario 2



Decarbonisation of heating and homes policy group

- You are part of a team researching policies to encourage people to decarbonise their homes predominantly through reducing energy consumption used for heating. How would EDI considerations affect your recommendations for policy change?
- Always ask yourself '**who**' will be affected by your actions. Avoid assumptions about their needs and requirements, take the time to research and understand the significance and impact of different people's circumstances.

Group activity



- In groups, reflect on the EDI considerations, possible barriers to inclusion, and the steps you could take to address them in one of the following research scenarios:
 - **Clear air zones for railways**
 - **Hydrogen Refuelling Station Optimisation**
- Make some notes on how you would address the situation you've been given to share with the wider group.

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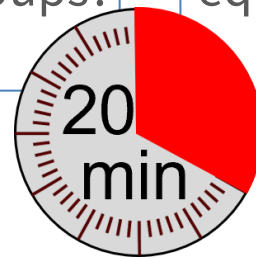
Group Activity

Clear air zones for railways

You and your team are working on a project to determine where and how to implement railway clean air zones, like the Birmingham clean air zone for cars . In your part of the project, you are determining where and how to set up a trial zone. What EDI considerations should you consider to ensure that your recommendations does not adversely affect disadvantaged groups?

Hydrogen Refuelling Station Optimisation

You and your team are working on a project to help the UK optimise the rollout of Hydrogen Refuelling Stations (HRS). Your part of the project involves determining which stations to be dual heavy duty/bus and car stations and where they should be situated. What EDI considerations should you consider to ensure the rollout of is equitable and inclusive?



Conclusions: EDI in research practice



- Make space to talk about EDI in your team, with your supervisors/supervisees, with advisory boards and collaborators, and with research and business users.
- Remember that no one has all the answers – creating a more inclusive research/business environment is a continual listening and learning process.
- Good actions come from good planning.
- Creativity comes from difference.
- Always think about ‘how’ you act to create positive change.

Individual reflection



First, ask yourself:

- Has your response to the opening question (‘Why is it important to consider EDI in your research planning, proposals and delivery, and/or business practice?’) changed?
- What are you going to **start**, **stop**, or **continue** doing in your research practice as a result of the session?

Think about your next project (or a current one) and ask yourself the following questions:

- **What** are the EDI implications of every aspect of your project? (not just recruitment, but the whole lifecycle: people management and training, meetings, events, activities, equipment use, accessibility, data sets, reasonable adjustments, working with collaborators, publishing and disseminating research, etc.) [note – this is not a finite list]
- **How** will you mitigate barriers in all of these areas?
- **Why** is it important that you act in this way?





ANY QUESTIONS?

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Useful links



Further reading:

- Willis, Mehta, and Davis, '[Twelve Principles Trainees, Pls, Departments, and Faculties Can Use to Reduce Bias and Discrimination in STEM](#),' *ACS Central Science*, 6 (2020), 2294–2300
- BSA, [The State of the Sector: Diversity and Inclusion in the STEM Industries in the UK](#) (2020)

Toolkits:

- <https://www.edi-toolkit.org/>
- <https://www.rdsresources.org.uk/edi-toolkit>

Glossary:

- <https://www.ukri.org/publications/ukri-glossary-of-edi-terms/>

Funder policies:

- <https://www.ukri.org/about-us/policies-standards-and-data/good-research-resource-hub/>
- <https://www.ukri.org/about-us/epsrc/our-policies-and-standards/equality-diversity-and-inclusion/expectations-for-equality-diversity-and-inclusion/>

Planning research and events:

- <https://www.sshrc-crsh.gc.ca/funding-financement/nfrf-fnfr/edi-eng.aspx#4a>
- <https://www.lms.ac.uk/adviceondiversityatconferencesandseminars>

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