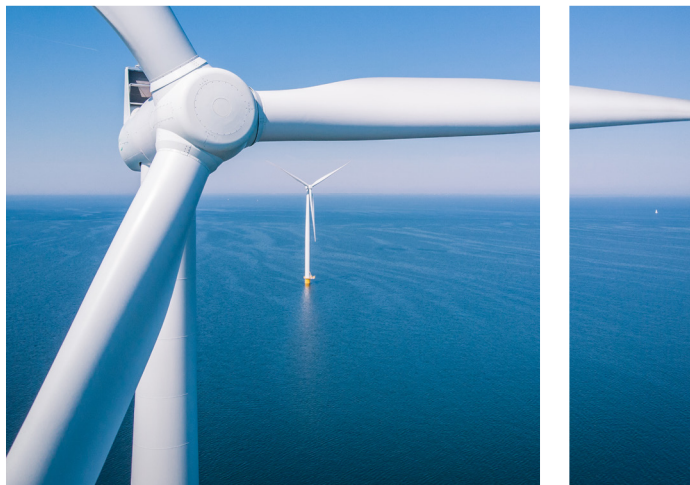
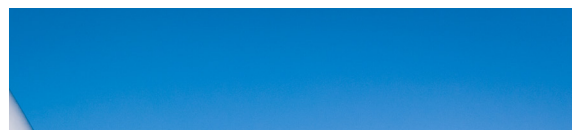




IChemE Climate Change briefing

Reviewed November 2024



Climate science is established. Evidence shows that human activity is causing the climate to change, with significant adverse consequences.

IChemE accepts the veracity of the science and conclusions published by the Intergovernmental Panel on Climate Change (IPCC). The global community must accelerate efforts to decarbonise our economic systems and stabilise the levels of greenhouse gases in the Earth's atmosphere, if we are to limit the global average temperature rise to 1.5 °C, beyond which irreversible consequences are more likely. Action needs to be global and just, recognising differences between regions, both in terms of historic contributions to emissions and vulnerability to the consequences of a warming planet.

Chemical, biochemical and process engineers are uniquely placed to take action across many sectors to help arrest, and where possible reverse, the damage to the life support systems of our planet and contribute to improving food security, energy and water availability, and human health and wellbeing.

Chemical, biochemical and process engineers are particularly well-equipped to imagine, design and implement:

- means of combatting the causes of climate change by reducing man-made emissions of greenhouse gases;
- means to mitigate against the effects of climate change through adaptation and developing resilient and robust processes;
- means of halting or reversing the effects of climate change by further developing carbon capture and storage processes, both technological and nature-based.

IChemE and its members have an important role to play in tackling climate change, working with stakeholders including governments and communities around the world to deliver a fair, safe and sustainable future in which we can all thrive. We commit to the principles listed in this briefing, and to work collaboratively as members, through education, research and sustainable engineering practices, in contributing to the transition to a net zero carbon world by 2050.



Guiding principles

IChemE's position on climate change is informed by and founded on nine guiding principles:

1. Net zero

IChemE fully supports the aims of the Paris Agreement to pursue efforts to limit the global temperature increase to 1.5 °C relative to pre-industrial levels. Achieving this will require net emissions of carbon dioxide and other greenhouse gases to be reduced to zero.

2. Emissions reduction must accelerate

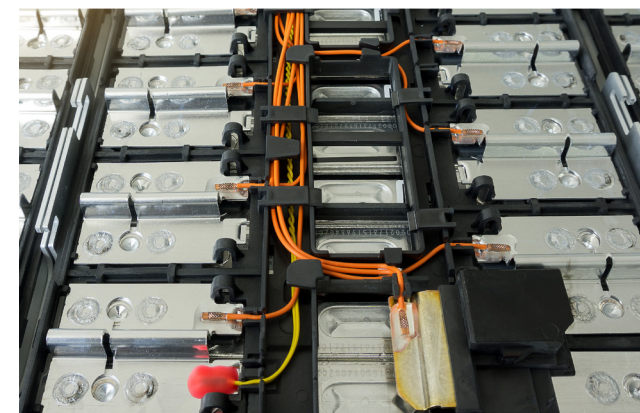
Much work is being done by individuals and companies in this area. However, serious action to combat climate change is urgent and must accelerate. IChemE will work with sectors, industries and governments to support them in achieving the rate of change needed to remain below 1.5 °C. The IPCC, in its Sixth Assessment Report, calls for a 43% reduction by 2030 compared to 2019 and a 60% reduction by 2035.

3. Guided by the UN Sustainable Development Goals

Climate change, its mitigation and adaptation to its impacts does not exist in isolation. The Institution endorses the UN Sustainable Development Goals (SDGs) to address climate change while making sure that no one is left behind. This means that all chemical and process engineers should work proactively to minimise adverse impact and not shift impact elsewhere – either geographically, socially, economically, or environmentally.

4. Systems/life cycle thinking

To achieve the desired outcomes, a global systems thinking approach is needed. Full and robust assessment of life cycles, their emissions and any other potential adverse impacts, together with the drive to a circular economy, is essential and should be encoded in appropriate standards for planning, design, construction, operation and decommissioning.





5. Global mechanisms

IChemE agrees that governments must take responsibility for the total emissions of greenhouse gases from their economies and work to meet the goal of net zero by 2050 by introducing and implementing appropriate policies.

6. Best available techniques

IChemE is clear that use should be made of the best available techniques to mitigate and adapt to the effects of climate change. Technologies must be chosen to ensure that they do not entrench the status quo but adapt to changing circumstances. Solutions must be designed to demonstrate the greatest positive outcomes for the environment, society and the economy, taking into account longevity and operability in changing environments.

7. Innovation

IChemE recognises the vital role of new technologies and processes in delivering the transition to net zero at the pace required. Innovation is required in development, technology transfer and scale-up alongside continuous process improvement. IChemE will support members in sharing knowledge and developing crucial skills.

8. Training and application of skills

The transition to a net zero carbon economy will bring opportunities and challenges. IChemE will work with members and the industries in which they work to support the education, training and application of skills of the current and future workforce.

9. Education

IChemE will encourage and support the embedding of sustainability, social responsibility and ethics into the education and training of chemical engineers – both in terms of formal education and the ongoing professional development of members throughout their careers.

What does this mean for IChemE, our members and our partners?

For IChemE?

IChemE's members work across many sectors and industries and can significantly influence global futures. We have a responsibility, set out in our Royal Charter, to sustainably benefit the global community by advancing the art, science, application and professional practice of chemical engineering in all its branches. We recognise that the best way to bring about the urgent action required to address the challenges of climate change is through our members and their employers. This includes encouraging businesses and supporting them to establish pathways to net zero carbon emissions and helping businesses adapt to a changing environment.

As a leading professional body, IChemE uses its networks to promote the issues surrounding greenhouse gas emissions and provide informed advice on solutions to combat, mitigate, reverse and adapt to climate change.

IChemE commits to:

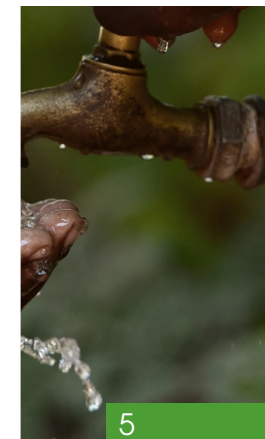
- provide policy advice to governments based on chemical engineering experience and expertise, consistent with our commitment to net zero carbon emissions and the UN SDGs;
- proactively engage with academia, industry, government reviews, consultations and policy debates consistent with our commitment to net zero carbon emissions and the UN SDGs;
- engage with businesses, young people and the wider community to help educate and inform on the need for positive action and the role of chemical and process engineering in bringing this about;
- develop and implement plans for achieving net zero carbon emissions from our direct operations and report on progress;

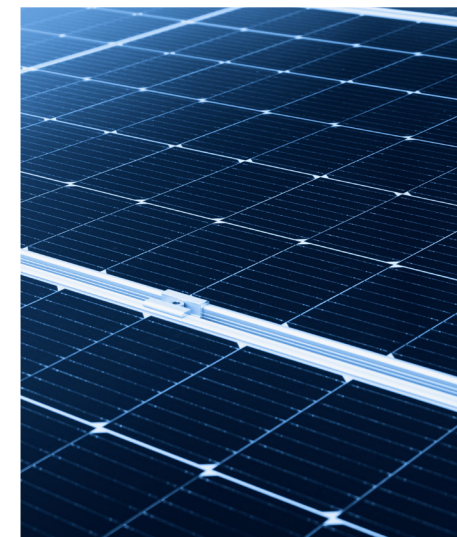
- establish (practical) investment criteria enabling Institution funds to be invested in alignment with our climate change goals;
- continually strengthen our professional development and training offers, along with activities including awards and medals, to upskill members and others and reinforce IChemE's commitment to sustainability and the UN SDGs;
- review this document every two years and report progress on the commitments annually.

For IChemE members?

Engineering in general, and chemical engineering in particular, is pivotal in responding to and addressing the threats posed by climate change.

The impact that a process has on the environment is established during design and delivered during operation. The impact of chemical engineers on all of these decisions is profound. Chemical engineers hold positions of influence in many of the industries and sectors that are significant contributors to greenhouse gas emissions, as well as those leading the transition. The challenge of climate change cannot be successfully addressed without the meaningful commitment and engagement of the chemical engineering profession.





IChemE commits to:

- update our Code of Conduct to include an obligation for all professional members to act in accordance with the principles of sustainability, including the UN SDGs, prevent avoidable adverse impact on the environment and society, act to mitigate greenhouse gas emissions and adapt to a changing climate. This includes protecting and, where possible, improving, the quality of built and natural environments;
- embed our key principles across our training and development, expecting members to engage proactively in activities that help them and their organisations in the transition to a net zero carbon economy and in climate change adaptation;
- widely share knowledge around sustainable design, including appropriate guidelines, tools and project evaluation techniques to assist practising engineers;
- enhance the expectations for educational accreditation around the treatment of sustainability, energy efficiency, resource efficiency (the circular economy), climate change, environment, and biodiversity, preparing chemical engineers for their role in the transition to a net zero carbon world;
- encourage all member groups and special interest groups to share knowledge widely and contribute to CPD, to enhance skills and knowledge in pursuit of net zero carbon futures and the understanding of climate risks, thereby engaging more members;
- identify gaps in existing knowledge and research specific to tackling climate change and promote the sharing of knowledge on new developments through IChemE channels and our partners.

For the sectors within which IChemE's members work?

These principles commit IChemE members to working towards minimising, and ultimately reaching, the lowest level of greenhouse gas emissions. Logically, this extends to working with the sectors that employ members to help them map emissions reduction pathways and operate in a changed environment.

IChemE commits to:

- propose action plans for economically sustainable and secure transitions to net zero carbon emissions in areas of chemical engineering practice and regions where members are active;
- encourage companies and organisations to report on and continually improve their performance on emission reduction, mitigation, and adaptation;
- encourage all sectors employing chemical engineers to embrace enabling technologies which can bring about real reductions in carbon emissions, better resilience, and increased efficiency.

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