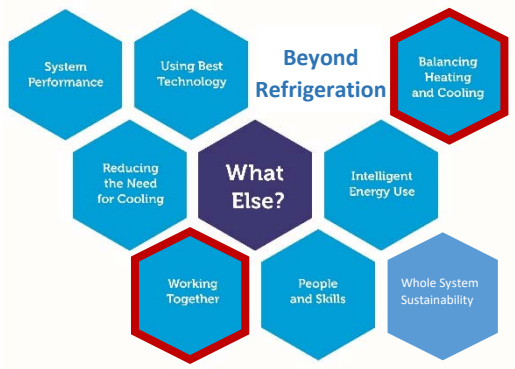
Net Zero Beyond Refrigeration Policy Brief

"Strategies to support users of refrigeration, air conditioning and heat pump technologies to achieve carbon reduction through effective policy implementation, financial incentives, and emissions monitoring."



Objective is to provide policy makers with

- expert advice from Institute of Refrigeration professionals on effective solutions to aid the move to net zero
- the information needed to ensure that policy decisions take into account the interrelation of heating and cooling needs
- realistic and achievable opportunities, solutions, targets and goals for users in this sector
- the necessary depth of understanding of total life cycle and sustainable operation
- advice for non-technical specialists responsible for high level net zero strategies within BEIS and DEFRA / DFE.

Background and Scope

- The Institute of Refrigeration (IOR) is the specialist professional engineering charity body for expert individuals working in this sector. It has a global reputation for independent technical advice and innovation. Its members provide services to users of cooling and heating services including manufacturing, supply, installation, service and maintenance, consultancy, and inspections
- Refrigeration, Air Conditioning and Heat Pump (RACHP) technologies are used to provide essential services in food production, distribution, storage and retail, industrial cooling processes in manufacturing, the climate control in spaces, such as datacentres, IT rooms, offices, shops, leisure facilities and hospitality, as well as pharmaceutical and healthcare facilities, amongst others.
- Heating and cooling in the UK is estimated to account for 10Mt CO_2e direct emissions from refrigerant use and 87Mt emissions from energy use to heat buildings.
- The sector is estimated to contribute to the UK economy through employment of around 70,000 people directly in manufacturing and service roles. It is estimated that the direct impact of cooling on the UK economy is £43Bn.

IOR Beyond Refrigeration Critical Issues and Ambitions

1. *Reducing the Need for Mechanical Cooling and Heating*

Our ambition is that policy should support businesses to consider mechanical refrigeration technology as a last resort instead of relying on "business and usual" purchasing and specification practices. This will mean the need to incentivise widespread adoption of net zero alternatives to mechanical cooling.

2. *Achieving Best System Performance*

Our ambition is that purchasers of new equipment and users of existing equipment should be supported to achieve the greatest possible reduction in energy demand and ongoing use, without compromising reliability.

3. *Balancing Heating and Cooling*

Our ambition is that policy will support the use of opportunities currently available to maximise heat recovery, sharing and storage across different business activities using heating and cooling.

4. *Making Use of Best Available Technology*

Our ambition is that the whole sector will rapidly adopt the best available, closest to net zero heating and cooling options as dominant technologies.

5. *Use Energy Intelligently*

Our ambition is for 100% renewable energy and zero carbon energy systems providing maximised efficiency, flexibility, and support grid stability.

6. *Developing the Best People and Skills*

Our ambition is that everyone involved in cooling and heating systems purchasing, maintenance or operation, has adequate technical understanding and responsibility for championing net zero.

7. *What else? Whole System Sustainability*

Our ambition is that everyone involved in cooling and heating systems purchasing, maintenance or operation has adequate technical understanding and responsibility for championing net zero.

Policy Brief 2 - People and Skills Solutions

The IOR Environment Working Group has identified a number of key areas for supporting the path to net zero (www.ior.org.uk/beyondrefrigeration). The ambition "**Developing the best people and skills**" is expanded upon here, together with proposed policy options to support the necessary change by all persons involved in using, designing, installing, servicing, maintaining, commissioning and decommissioning of heating and cooling in order to have a long term and lasting impact on achieving net zero through long term investment in people and skills.

Setting the Skills Agenda

There are three key target groups that would support our ambitions across all eight critical areas:

1. *Owner Operator Knowledge and End User Awareness*

	Policy proposals	Possible policy mechanisms
Policies are needed to ensure owners of cooling equipment can identify and action the necessary steps to reduce emissions and can integrate these into their business practices and human resources strategies	A user skills toolkit to include: ✓ Purchasing policies for environmental payback ✓ Better specifications ✓ Commissioning practices ✓ Operations and use ✓ Energy management and monitoring ✓ Collaborative practices ✓ Data sharing for benchmarking and case studies ✓ Environmental Legislation and Regulation awareness and implementation ✓ Whole of life costing and management ✓ Equipment users need to have internal policies on skills levels required of system managers and external contractors / consultants in the environmental field	✓ Energy Efficiency Inspections to be broadened to require annual inspection of all cooling and heating requirements (instead of only larger systems and irregular reporting) including industrial facilities ✓ Building owners to report on energy use and changes made to reduce energy year on year ✓ This will require building managers to upskill taking a more active role in managing cooling and heating energy use

2. *Technician Skills*

	Policy proposals	Possible policy mechanisms
Mandatory Training and Certification is currently based on minimum standards, but there is potential to achieve much more with greater focus on delivering best practice in direct and indirect emissions reduction and how to achieve best energy efficiency in the system	✓ Employers must implement an improved commitment to developing the skills of the technicians they employ and need ready access to low cost independently certified and targeted CPD for existing workforce ✓ A national mandatory Environmental Skills Passports is needed (e.g. existing engineering skills card scheme) which specifies the required number of hours training each year to work in the sector to ensure skills are renewed and updated, with some mandatory units (e.g. understanding efficiency measures, how basic maintenance can have a major impact, environmental comparison of refrigerant choice, etc.) and optional application or technology specific units (e.g. new technologies, heat pump transition etc.)	✓ F Gas Regulation Review must include more emphasis on delivering efficiency, monitoring of use of refrigeration and skills to support UK Net Zero policies ✓ Building Regulations should mandate Environmental Skills Passports and minimum CPD to maximise the opportunities for personnel to reduce energy use through service and maintenance operation ✓ Heat in Buildings strategy funding must cover installer / maintenance skills as well as installation incentives ✓ DELUC Minimum Technical Competencies working groups for environmental skills for installers (Air Conditioning and Ventilation)

3. Design and Consulting Engineer Skills

	Policy proposals	Possible policy mechanisms
The sector has a shortage of skilled designers as well as having identified knowledge gaps amongst those currently working in such roles	✓ Consultant Building Design Engineers who prepare specifications need to be better informed of cooling and heating options and implications ✓ A higher-level apprenticeship (Degree level) in RACHP Environmental Management to attract new highly skilled specialists into these roles ✓ Modular CPD to support new technology, net zero skills, environmental audits, energy performance and carbon foot-printing, net zero strategies, refrigerant selections, etc., with input from manufacturers. CPD should be certified by an independent body and be flexible in its delivery ✓ Engineering Council registration to ensure engineers commit to environmental best practice and skills development with mandatory CPD (Should have awareness of innovation and environmental technologies and practices)	✓ Apprenticeship levy funding to be made available for CPD training to improve skills for the existing workforce as well as new entrants in technical roles

Further policy briefs are planned and this document will be updated as necessary

Check www.ior.org.uk/beyondrefrigeration for updates