

**Environmental  
Sustainability:  
Heads of  
Chemistry  
UK Handbook**

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## 1. About this handbook

This handbook aims to provide a menu of practical options for Heads of Chemistry departments. It covers both what can be done and how to get things done on environmental sustainability. It complements lab or institutional sustainability because a department or division is a unique intermediate scale at which certain types of sustainability initiatives are possible and potentially more efficient. Some examples are:

- Building-scale initiatives e.g. infrastructure upgrades, data gathering, opening hours
- Actions involving multiple labs or sections e.g. nitrogen generation, helium recycling, centralised procurement, waste, auditing or inventorying
- Linking sustainability in research and in teaching
- Operating as a unit within an institution, with a formal head and associated connectivity to cross-institutional structures, expertise and resources
- Including people in different roles covering a range of teaching, research and technical expertise
- Harnessing enthusiasm, and sharing responsibilities and opportunities, across staff, postgraduate and undergraduate students
- Convening people and communicating e.g. departmental working groups and committees, newsletters, staff meetings.

Heads of Chemistry UK (HCUK) is an independent, national body representing the collective leadership of chemistry in higher education across the UK and Ireland.

Its membership is comprised of Heads of Chemistry departments and schools from universities and similar institutions. HCUK works to advance the interests of the chemical sciences in higher education, providing a strategic voice for the sector and representing the executive and academic functions of chemistry departments across both research and teaching.

This handbook is based on interviews in January 2026 with 14 current or recent members of HCUK. It builds on a session about environmental sustainability at the May 2025 HCUK conference. There is also a list of links to more detailed resources in Section 6.

The feasibility of most initiatives depends on context because departments vary in everything from their size, budget, age and infrastructure to their research focus, teaching offering and place within an institutional structure. It is also important to consider initiatives in light of other factors such as health & safety, real or perceived trade-offs with research and teaching quality, and the availability of financial and environmental data.

So, while this handbook cannot be a simple checklist, its spirit is to support colleagues and minimise duplication by sharing practical approaches from people who have served as Heads of Chemistry and worked to make progress on environmental sustainability in their context.

## 2 Environmental sustainability drivers

There are many drivers for improving the environmental performance of university chemistry departments.

Environmental sustainability drivers for chemistry departments	
<b>Financial resilience</b>	<ul style="list-style-type: none"> <li>Reduce operating costs e.g. water and energy consumption, waste, procurement, equipment lifespan</li> </ul>
<b>External requirements</b>	<ul style="list-style-type: none"> <li>Meet funder requirements on sustainable lab certification</li> <li>Support institution in complying with Concordat for the Environmental Sustainability of Research and Innovation Practice</li> <li>Meet Royal Society of Chemistry degree accreditation criteria</li> </ul>
<b>Institutional expectations</b>	<ul style="list-style-type: none"> <li>Contribute to institutional targets e.g. net zero</li> <li>Evolve chemistry curriculum as part of institutional curriculum reviews</li> </ul>
<b>Student recruitment</b>	<ul style="list-style-type: none"> <li>Respond to interest from prospective students in institutional and departmental sustainability</li> <li>Add value to degree programmes and wider student experience by offering sustainability employability skills development</li> </ul>
<b>Staff development</b>	<ul style="list-style-type: none"> <li>Provide opportunities for staff to apply for funding, take on sustainability leadership roles &amp; build networks</li> <li>Evidence departmental sustainability efforts to 'walk the talk' on sustainability-focussed research</li> <li>Build engagement with industry partners through sustainability efforts</li> <li>Engender pride and boost morale</li> </ul>
<b>Chemistry profile</b>	<ul style="list-style-type: none"> <li>Showcase chemistry as a contributor to improving sustainability</li> <li>Contribute positively to wider institution and research community</li> </ul>
<b>Moral &amp; societal responsibility</b>	<ul style="list-style-type: none"> <li>Contribute to e.g. UK Net Zero targets, UN Sustainable Development Goals (SDGs)</li> <li>Equip next generation of graduates entering the workforce with sustainability knowledge &amp; skills</li> </ul>

**"Providing the university with case studies from our department demonstrates our value and the benefits we can deliver for environmental sustainability."**

**Dr Emma Rixon**  
Nottingham Trent University

**"Our School has benefited significantly from press releases on our research activities in sustainability, air quality and related areas as these topics are attractive in terms of column inches in newspapers and media outlets. In addition, external stakeholders like to be in a position to quote researchers in the area, which has proved beneficial to our School in terms of visibility of our researchers and research activities."**

**Professor Anita Maguire**  
University College Cork

**"People ask us about sustainability when they come around on open days and applicant visits. We talk a lot about our sustainability work, so I think that's an important element when it comes to showcasing a degree in chemistry."**

**Professor Matthew Jones**  
University of Bath

**"We should all be paying attention to changing the narrative and talking about the fact that chemistry is a key driver for the change to more sustainable processes."**

**Professor Wendy Brown**  
University of Sussex

## 3 Actions for departments

Actions at departmental level range from operational and technical changes to evolving education programmes and developing people. These actions work in tandem with those of individual labs or at institutional level.

### 3.1 Building energy use

#### General energy reduction

- Review department opening hours e.g. close all or part of department overnight or on weekends
- Participate in institution-wide holiday shutdowns
- Use Building Management System (BMS) to improve central heating control
- Install LED lighting and automated lighting sensors
- Install solar panels on buildings
- Review usage and ensure servicing of multi-user systems e.g. compressed air

#### Fume hood management

- Use fume hood stickers as visual reminders of how closed the sash needs to be
- Switch off or reduce flow out-of-hours
- Upgrade to more efficient fume hoods
- Use ductless fume hoods if compatible with the chemistry

#### New buildings & facilities

- Advocate for sustainability in planning of new buildings and lab spaces
- Upgrade non-laboratory spaces to lab spaces, which can be less carbon-intensive and more financially viable than new-build

### 3.2 Laboratories: Individually or as clusters

- Actions associated with certification of wet research & teaching labs e.g. Edinburgh Sustainable Lab Awards, Green Impact Laboratory Accreditation, LEAF, My Green Lab, and dry labs e.g. Green DiSC
- Wash & reuse lab coats e.g. organised location for students to leave lab coats at the end of semester for washing and repair
- Reduce glove use e.g. black rubber gloves rather than disposable nitrile gloves
- Recycle gloves, noting that bulk ordering across labs or departments can reduce costs and increase recycling
- Reduce water consumption e.g. recirculating chillers, waterless condensers, removing water aspirators
- Increase ultra-low temperature freezer temperatures from  $-80^{\circ}\text{C}$  to  $-70^{\circ}\text{C}$
- Nitrogen generation as an alternative to purchasing cylinders or using boil-off from liquid nitrogen tanks
- Recover & recycle helium e.g. for NMR, mass spectrometry
- Recycle acetone
- Keep sustainability in mind when upgrading lab equipment e.g. more energy efficient NMR systems, oil-free vacuum pumps

***"We convinced our Estates team to reduce the fume hood flow by 20% while we did a walk-around of the department. We then convinced them to do the same over Christmas, and we made a significant energy saving just by doing that."***

**Dr Derek Wann**  
University of York

## Laboratory certification

### Reasons to get certified:

- University requirements
- Funder requirements
- Gives predefined actions so people do not have to develop from scratch
- Provides a framework for setting departmental targets e.g. percentage of labs achieving certification at different levels
- Highlight teaching lab certification at open days
- Drive staff morale through sense of achievement in attaining certification
- Career development opportunity e.g. experience in action planning and leadership on certification

### How:

- Involve technicians, researchers and PIs
- Technical teams initiating teaching lab certification can show the way for research labs
- Postgraduate students and postdocs can lead, bringing career benefits e.g. development of lab expertise, opportunities to work collaboratively, building connections with technical teams in and beyond department
- Set up or participate in cross-faculty online groups or fora to share progress, good practice and advice
- Group similar labs together to reduce paperwork

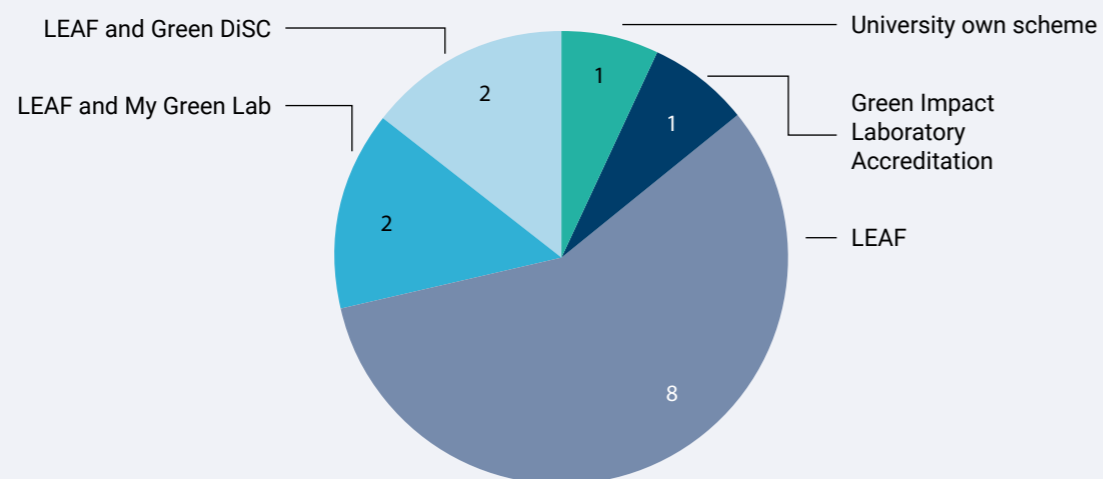


Fig. 1: Department involvement in laboratory certification schemes (n = 14)

**"Some of our technicians have taken on responsibilities such as lab safety coordination and LEAF certification, which has given them more visibility across the department and helped them to develop their skills."**

**Professor Claire Carmalt**  
University College London

## 3.3 Procurement, sharing & waste

### Procurement & suppliers

- Identify opportunities to reduce and rationalise by using centralised systems and working with procurement experts to analyse what is being purchased at a departmental or school level
- Include sustainability specifications in procurement
- Decouple ordering of glass vials and lids as the latter are not needed for some applications such as thin-layer chromatography and solvent solubility screening
- Factor in lifespan when purchasing computers and tablets e.g. for teaching labs
- Explore manufacturer takeback schemes for computers & instruments

### Sharing and reuse of resources

- Share equipment to make best use of what is already owned by the department, wider institution and other universities e.g. via regional university networks
- Centralise large-scale equipment, with PIs/grant holders paying into shared facilities for e.g. NMR, XRD
- Recover and reuse equipment, chemicals and consumables from labs when groups change e.g. when PIs leave institution
- Link with local secondary schools to pass on unused equipment and chemicals

**"We're proud that we've been able to repurpose parts of the building into useful lab space – with the beneficial environmental impact of repurposing versus building afresh being key in getting our university to invest in this work."**

**Dr Nicholas Evans**  
Lancaster University

## 3.4 Degree programmes & teaching

### Evolving content and assessment

- Embed sustainability principles and methods across all courses, not just green chemistry modules
- Introduce foundation module on sustainability principles for students to apply across their degree programme
- Develop new programmes on sustainable chemistry (see Section 6.3)
- Ensure sustainability aspects of course content are explicit for students e.g. included clearly in learning objectives, badged in course materials
- Encourage students to link research project outcomes with SDGs or green chemistry in written reports and oral assessments
- Factor in increased sustainability content in secondary and post-16 education to ensure degree content is fresh and cutting-edge for students
- Draw on resources from other organisations (see Section 6)
- Teach sustainability topics using a story-telling approach
- Involve industry partners in setting and assessing sustainability-related challenges e.g. students work in teams to redesign experiments

**Teaching labs**

- Review practicals in order to e.g. minimise use of toxic chemicals and volatiles, reduce use of organic solvents, including acetone for washing, move towards solvents with lower disposal costs
- Reduce waste e.g. making up only the volume of solvent/buffers needed for a class
- Design practicals so product from one class is used as the starting material in another
- Introduce new lab practicals specifically to bring in sustainable chemistry topics e.g. photocatalysis, flow chemistry, electrochemistry
- Involve PhD students and technicians who supervise teaching labs in reviewing experimental routes as well as suggesting and designing alternatives
- Discuss with students about why changes to teaching labs have been made
- Support development of critical thinking skills through reflection about why one option is more sustainable than another
- Explicitly cover skills and topics desired by industry e.g. REACH, risk assessment, life cycle assessment
- Look at curriculum, especially practicals, as a whole considering how many times certain skills are taught and whether more holistic changes could remove repetitions

**3.5 Staff & early career researcher development**

- Include sustainability as part of regular research seminars e.g. include solvent selection in seminars about pharmaceuticals
- Offer PhD students opportunities to take master's or undergraduate courses on sustainability topics e.g. life cycle assessment
- Include courses on sustainable research practice as part of doctoral training centres

- Provide opportunities for staff and early career researchers (ECRs) to take courses run by sustainability institutes or other departments
- Provide training to broaden understanding of sustainability and allied topics like systems thinking, and provide opportunities for big picture thinking e.g.,
  - Colleagues from geography and environmental science ran training on SDGs to help lecturers incorporate concepts into the chemistry curriculum
  - Create fora for members of the department to come together to share learnings from trainings or work through certain aspects as a group e.g. collective thinking on embedding SDGs
  - Offer courses through external providers
- Explore and take up opportunities to adapt sustainable chemistry courses for wider audiences e.g. through institution-wide sustainability institutes or programmes

***"Thinking about sustainability more mindfully and intentionally has made us consider how we could collaborate across the institute and develop courses that are aligned with some of the expertise and skills that's needed in the future to meet the needs of the modern industrial strategy."***

**Dr Baljit Thatti**  
Kingston University

***"In first and second year we have industry come in and set a challenge for the students, who then present their work and include an aspect of environmental impact. For their third-year research project we ask students to include how their project works towards one of the UN Sustainable Development Goals – so they are building those sustainability skills throughout their degree."***

**Dr Emma Rixon**  
Nottingham Trent University

***"In the future as PGRs join us, we are fully anticipating them to be asking us about our sustainability processes because they'll have met sustainability in their undergraduate studies. So that's a driver for us in terms of bringing in sustainability as part of our PGR level research and training."***

**Dr Nicholas Evans**  
Lancaster University

***"Our legacy is the people we train and the skill sets they take away. We have to create appropriately skilled people for the future and not the past. That's absolutely key."***

**Professor Peter Licence**  
University of Nottingham

## 4 How to drive change

There are many barriers to taking action on environmental sustainability, including lack of time and money, lack of expertise and data, resistance to change and concerns about greenwashing. While some of these barriers are beyond the control of an individual, lab or department, there are various ways to make progress as a department.

### 4.1 Engaging a range of people

Many people can contribute to sustainability efforts, from providing expertise and enthusiasm to taking on responsibilities for different initiatives. It is also important to engage colleagues and students within and beyond a department to assuage concerns and ensure long-term support for initiatives.

#### Contributions from across a department

- Everyone can contribute – from academic and technical professional staff to students
- Sustainability Leads can have multiple responsibilities
- People bring expertise from industry e.g. industrial placement and degree apprentice students sharing their experience of industry best practice; departmental industrial advisory panel members providing insight into industry expectations of graduates
- People bringing experience from international settings e.g. international collaborators and visitors can share sustainability challenges and solutions; students from resource-limited settings may have more experience of using fewer resources

- Building managers, technical and operations experts can review departmental activities, going on to propose and execute interventions e.g. compressed air, heating, lighting
- Undergraduate students can support and benefit from departmental sustainability activities through summer projects e.g. monitoring indoor air quality, carbon audits, life cycle assessments
- Undergraduate students can, as a project, review curricula and highlight where sustainability is present explicitly or implicitly

#### Departmental sustainability leads

9 out of 14 departments have a named individual with specific responsibilities related to sustainability. This person is variously a Head of Department, academic or technical professional. Allocation of responsibilities and workload varies. In some departments time is formally apportioned as part of a person's role and objectives. Responsibilities include:

- Coordinating laboratory certifications within and outside the department

**"Our colleagues working internationally sometimes must substitute a chemical they can't access, and it often turns out to be a greener way to do it. So we're learning from them and I think it's a really positive exchange."**

**Dr Lindsey J. Munro**  
Manchester Metropolitan University

**"Having the technical team on board is critical. They're responsible for things like procurement changes and equipment, so you're not going to get anywhere if they're not on board. We were fortunate that our technical team took a leading role in pursuing more sustainable practices and equipment."**

**Dr Thomas Anderson**  
University of Sheffield

- Liaising with technical and professional services staff on laboratory sustainability
  - Partnering with Estates to gain support, insight and identify opportunities
  - Sitting on university-wide steering groups or committees and feeding wider university initiatives and activities back to the department
  - Running meetings to progress sustainability activities in the department e.g. departmental town halls, working groups
  - Working with central sustainability teams e.g. to develop online sustainability modules available across the institution
  - Ensuring safety and sustainability work in tandem by e.g. being a bridge to the departmental safety committee
  - Regularly reporting on progress to the Head of Department.
- Departmental communication**
- Communication about sustainability within a department is crucial for
- Listening to ideas, feedback and concerns
- Sharing benefits and reasons for change, including how views have been taken into consideration
  - Sharing outcomes to build support, trust, confidence and pride
- Channels include:
- Sustainability town halls for all members of the department
  - Sustainability as a regular agenda item in school forums and departmental meetings
  - Emails highlighting departmental sustainability activities and cascading information from broader faculty or institution
  - Sustainability updates in departmental newsletters
  - Dedicated annual or biannual sustainability newsletter
  - News articles on department website to share sustainability activities and make clear department has a strong sustainability agenda and record
  - Dedicated MS Teams site to share sustainability ideas and outcomes of interventions

**"Our estates department are very switched on about sustainability and energy efficiency. There's not a conversation about whether we should be doing it or not. It's more of a conversation about how we're going to get it done."**

**Professor Panagiotis Manesiotis**  
Queen's University Belfast

**"I asked other heads what they do in terms of working hours and best practice. Being able to say that University X has imposed working hours was a bit of an eye opener for some colleagues."**

**Professor Craig Butts**  
University of Bristol

### Collaboration with other departments & functions

- Central building management and estates teams have key expertise in sustainability
- Central sustainability teams can signpost to resources, provide information on relevant institutional activities and funding for upgrades
- Other departments within and beyond natural sciences and engineering can share learning and collaborate on initiatives such as:
  - using chemical inventories
  - developing procurement policies
  - laboratory certification
  - finding out about and accessing sustainability funding
  - multidisciplinary approaches to sustainability baselining and measurement
  - collaborating on curriculum development e.g. including life cycle assessment, systems thinking
  - developing new university training courses

- developing departmental action plans and setting sustainability KPIs
- Sustainability networks enabling collaboration and sharing of best practice

### Support from outside an institution

- Heads of Chemistry in other institutions or industry share insights
- Groups such as HCUK and Directors of Undergraduate Teaching provide fora to share learning and good practice
- [Green Chemistry Commitment](#) provides a useful framework and community, and is signed off at faculty level which helps raise the profile of sustainability efforts
- The UK Institute for Technical Skills & Strategy [Environmental Sustainability Network](#) enables sharing best practice, knowledge, and networks for technical professionals

### 4.2 Being data-driven

#### Data is important to:

- Support decision-making and prioritisation
- Secure investment and support for sustainability initiatives (money and time)

**"My colleagues are evidence-driven people. If we can show them that things are making a difference, they're much more likely to get on board with it."**

**Dr Derek Wann**  
University of York

**"We've been engaging with the Department of Social Responsibility and Sustainability to help us with our key performance indicators, because it's a bit of a minefield trying to navigate your way through all the sustainability metrics."**

**Professor Jason Love**  
University of Edinburgh

- Provide reassurance where people may have concerns e.g. health and safety in the context of changes to fume hoods
- Demonstrate impact to colleagues in the department and to university leadership.

**There are inter-connected challenges to being data-driven, including:**

- Data may not be available e.g. on departmental energy use
- Variation in BMS functionality and in availability of staff with expertise to use it optimally
- Variation in data granularity e.g. may not be available at lab level
- Gathering and interpreting data takes time and expertise e.g. gathering primary data, converting financial data into data on energy or water use, converting energy or water use into carbon or other environmental impacts.

**Some approaches to overcoming these challenges are:**

- Use other sources, such as estimates or proxies, where these are 'good enough' to make decisions or report e.g. from other chemistry departments, suppliers, literature

- Use portable energy meters to collect lab-by-lab level data
- Build data collection and analysis into student projects and courses

### 4.3 Action plans & KPIs

Sustainability reporting requirements at a departmental level are generally minimal, although departments typically feed into university-wide sustainability action plans. A formal plan is not essential and can take time, but plans can be useful either standalone or as part of wider departmental strategic plans as a way of:

- Ensuring clear and strategic targets are set, and time is allocated for sustainability in strategy discussions
- Providing a structure to track and celebrate progress, presenting efforts holistically for use in communications within the department, with prospective students and university leadership and for RSC accreditation
- Building collaborations with other departments and functions in the university to develop methods and metrics e.g. social sciences, central sustainability, estates and procurement

**"Introducing working hours across the school means we've saved money on electricity. But what started out with a sustainability focus has led to also considering wider benefits in terms of health and safety, work-life balance and building security."**

**Professor Craig Butts**  
University of Bristol

**"Once the chemistry teaching lab team got LEAF accreditation, other schools like Biological Sciences saw the opportunity to learn from what they've done."**

**Professor Wendy Brown**  
University of Sussex

- Building capacity and skills in areas such as sustainability data and systems thinking

### 4.4 Identifying & leveraging win-wins

#### Financial

- Helium recovery and re-use, especially in the context of increasing helium prices, can more than pay back upfront investment within a few years
- Reducing and rationalising procurement can bring cost savings e.g. separating procurement of vials and lids, sharing and coordinating purchasing of chemicals (which can be facilitated by chemical inventories)
- Competence in sustainability can lead to increased commercial work for the department and support replacement of equipment e.g. contract research and specialist analysis
- Nitrogen generation potentially saves on costs of purchasing for multiple departments (chemistry, physics, biology, engineering)

- Solvent recycling reduces both purchasing and waste disposal costs

#### Health, safety & well-being

- Changing building opening hours decreases risks associated with lone or small numbers of people working
- Changing building opening hours can instil better culture in terms of work-life balance
- Reduction in water usage reduces lab flooding risk
- Chemical inventories, which are important for health and safety including regulatory compliance, also open the door to sustainability-related efforts including sharing, avoiding duplication in procurement and minimising waste

#### Connectivity & relevance within changing institutions

- Connect with evolving institutional degree programmes and student expectations
- Contribute to institutional targets and successes in sustainability
- Lead and collaborate on pilot activities that can be rolled out more broadly in an institution

**"The university holds most of the financial levers. It has the funds to allow you to modify your building and to update your degree programmes, so I think it's very important to understand how the university can help you."**

**Professor Jason Love**  
University of Edinburgh

**"We're proud that we've minimised the amount of water we use in undergraduate teaching labs because we were able to get a grant from the central university sustainability team to replace all our water aspirators with vacuum pumps."**

**Professor Panagiotis Manesiotis**  
Queen's University Belfast

- Be a positive early-adopter of institutional initiatives
- Find out about university priorities and potential financial and non-financial support

#### Departmental profile & leadership

- Host seminars and conferences on green and sustainable chemistry
- Foster discussions in departmental meetings around live issues such as AI and sustainability
- Develop and share new research expertise on sustainable research methods e.g. flow chemistry, mechanochemistry
- Feature sustainability in local media interactions, university prospectus and open days

#### Student education & experience

See Section 3.4

#### Staff development

See Section 3.5

### 4.5 Securing funding

Many sustainability initiatives require significant investment in equipment, infrastructure, systems and resources. Some examples of smaller current and historical funding opportunities are:

- Central university sustainability funds, often shared on university website or signposted by central sustainability or estates teams e.g. [University of Bath](#), [Imperial College London](#), [Queen's University Belfast](#)
- Funding for software or digital technologies that can be applied to sustainability challenges e.g. funding postgraduates and undergraduates to create software that can be used to assess the sustainability of their research projects

- [RSC Sustainable Laboratories Grant](#)
- [NERC](#) solar panel installation to power atmospheric chemistry laboratories at the National Centre for Atmospheric Science and University of York
- [MRC call](#) for research into environmental sustainability in life sciences and medical practices
- [British Council Transnational Education Exploratory Project](#) grants supporting partnerships between UK and Nigerian higher education institutions, aiming to enhance institutional capacity, widen access and co-develop sustainable academic programmes
- [Beyond Benign Green Chemistry Education Awards](#)

#### Some strategies to increase access to sustainability funding opportunities are:

- Build links with other departments and functions who may be aware of internal and external funding opportunities
- Encourage staff, including technical professionals and ECRs, to apply for small grants
- Strengthen expertise on sustainability bids and tenders by involving colleagues on technical teams
- Make the most of opportunities for technical colleagues and ECRs to gain experience e.g. in project leadership, grant-writing
- Facilitate support for applying for smaller grants e.g. request that senior academics with experience in securing large grants provide guidance and scrutiny on applications for small sustainability grants

### 4.6 Starting small & growing

Some sustainability-related changes can be piloted or introduced gradually, learning in the local context about what works and any challenges. Starting small and thinking about what might demonstrate a 'quick-win' can help build momentum. Examples include:

- Test interventions in teaching labs and transfer to research labs, or vice versa e.g. acetone recycling
- Trial new equipment in research labs in similar fields and then adopt more broadly
- Use small amounts of funding to make incremental changes over longer periods e.g. to gradually replace older fume hoods or upgrade oil pumps
- Use learnings to develop longer-term action plans and KPIs
- Use successes to build confidence in sustainability efforts e.g. showing they do not increase risk or reduce quality.

**"Sometimes it takes actually seeing sustainable practices in operation to realise what can be achieved. Someone might be assigned to teach in an undergraduate lab, for example, and be inspired to make changes in their own research lab."**

**Dr Thomas Anderson**  
University of Sheffield

**"It became clear as we prepared for our RSC accreditation visit that there had been many individual initiatives to enhance sustainability across the School that collectively add up to quite a significant impact. It was very helpful to pull everything together and leverage it more within the University to enhance the visibility of the School in this regard."**

**Professor Anita Maguire**  
University College Cork

## 5 Roles of Head of Department

Heads of Department have many responsibilities and pressures on their time. Here are some ways in which Heads can focus their personal efforts to drive, enable and support departmental sustainability.

### 5.1 Visible leadership & prioritisation

- Show that sustainability is a departmental priority e.g. chairing or championing working groups and their outcomes, leading or being actively present at town hall meetings, including it in departmental strategy
- Take stock of departmental activities holistically to periodically celebrate, review and check priorities and responsibilities
- If relevant, ensure own research labs have sustainability certification
- Do departmental walk-arounds, noticing sustainability initiatives and the people responsible for them
- Author articles or quotes e.g. on website and newsletters
- Highlight and facilitate career benefits to staff and students e.g.
  - managing projects or applying for funding
  - working in multidisciplinary teams
  - developing stakeholder engagement and influencing skills
  - developing technical sustainability or data and analytical skills
  - gaining insights into how the university works
  - gaining leadership experience
  - pitching ideas based on a financial case
  - increasing personal visibility in service of the department and university
- Ensure suitable work-loading for people taking on significant roles e.g.

### 5.2 Supporting & enabling others

- Identify, encourage and support people across career stages and roles to act as champions, take ownership and drive progress
- Work to reduce blockers or push for higher-level support for others when needed
- ensuring enough flexibility in an individual's responsibilities to cover sustainability aspects
- formally allocating a percentage of their time to dedicate to the sustainability side of their role

**"My lab was the first research lab in the department to get Silver LEAF accredited because I didn't want to push this in the department and not do it myself."**

**Professor Matthew Jones**  
University of Bath

**"As Head of Department I took the time to learn about what the department is currently doing and join everything up across the department. Encouraging protected time for colleagues to have open conversations about how to do things more sustainably ensures that we are working towards the same goals."**

**Dr Baljit Thatti**  
Kingston University

- including sustainability in annual personal development or performance objectives

### 5.3 Engaging & advocating beyond the department

- Build constructive relationships with Heads of other schools and programmes related to sustainability (both lab-based and e.g. social sciences)
- Take part in or facilitate walk-arounds of department buildings with estates and building infrastructure teams to help colleagues build knowledge about and propose solutions to chemistry-specific issues
- Raise departmental concerns and propose solutions at faculty-level meetings
- Advocate to senior management for funding and support

### 5.4 Showcasing & celebrating positive activities

- Highlight departmental sustainability efforts, achievements and wider benefits to university leadership
- Nominate individuals, teams and departments for sustainability prizes and awards

- Celebrate achievements, big and small e.g.
  - highlight labs awarded sustainable laboratory certification in Head of Department emails
  - propose stories for departmental webpages
  - send emails to individuals to show you have noticed their efforts

**"Identify how sustainability aligns with the strengths of the people in your department and how it can help you to collectively amplify what it is that you do."**

**Dr Lindsey J. Munro**

Manchester Metropolitan University

**"Speak to other heads that have already done it. It's much better to share best practice rather than reinvent it every time."**

**Professor Claire Carmalt**

University College London

**"I think being able to articulate the benefits of using more sustainable approaches and systems is important. You have to be able to advocate and you have to get people to jump on the bus and join you on your journey."**

**Professor Peter Licence**

University of Nottingham

## 6 Links, resources and acknowledgements

This section has more detailed examples and links to support some of the actions and approaches covered in Sections 3-5.

### 6.1 Lab certification, equipment sharing, reuse & donation

#### Lab certification & guides

Frameworks to support improved sustainability of laboratory environments. Typically, users meet criteria by demonstrating actions completed to manage e.g. energy and water use, waste reduction and chemical use.

- [Edinburgh Sustainable Lab Awards](#)
- [Green DiSC](#)
- [Green Impact Laboratory Accreditation](#)
- [LEAF](#)
- [My Green Lab](#)
- [Royal Society of Chemistry Sustainable Labs projects, networks & resources page](#)

#### Equipment sharing, reuse & donations

Many universities, regional networks and companies facilitate equipment sharing and recycling within and between universities.

- [JISC Equipment Data Service](#)
- [GW4 network](#)
- [Royce Equipment Access Schemes](#)
- [UK Institute for Technical Skills & Strategy \(ITSS\) Equipment Sharing Fund](#)
- [Uni Green Scheme](#)
- [University of Cambridge Equipment Sharing, Donations, Disposal & Recycling](#)
- [UKRI SPARKHub](#) provides practical guidance, certification and community-led good practice

### 6.2 Helium & solvent recycling, nitrogen generation, fume hoods, NMR, pumps

#### Helium recycling

Non-renewable helium gas can be recovered (typically from NMR instruments) initially into a gas collection bag and then liquefied and stored ready for re-use.

- Implemented by e.g. [University of Edinburgh \(Chemistry\)](#), [University of Nottingham](#), [University of Cambridge](#), [Lancaster University \(Chemistry & Physics\)](#), [University of Manchester \(Manchester Institute of Biotechnology\)](#)
- [Carbon footprint of helium recovery systems](#), *Low Temp. Phys.*, 2023, **49**, 967 (ISIS Neutron and Muon Source)
- [Helium Recycling in NMR Laboratory – what's next?](#) (University of Edinburgh)
- [Liquid Helium, supply and demand: the case for recycling](#) (University of Manchester)
- [What goes up does not come down: Helium recovery and liquefaction at the University of Edinburgh](#)

#### Nitrogen generation

Nitrogen generators provide a constant source of gas and reduce environmental sustainability concerns associated with compressing and transporting nitrogen in cylinders.

- Implemented by e.g. [University College London \(Chemistry\)](#), [University of Liverpool \(Centre of Excellence for Infectious Diseases\)](#), [University of Manchester \(Stoller Biomarker Discovery Centre\)](#)

- [Advantages of using a lab gas generator over pressurized compressed gas cylinders](#)
- [Liquid nitrogen & cylinders vs nitrogen gas generation](#)
- [Using an On-Site Liquid Nitrogen Generator for NMR Cryogen Supply and Other Departmental Needs](#), **J. Chem. Educ.**, 2015, **92**, 589

### Solvent recycling

High-use solvents such as acetone can be recycled at rates of approx. 80% using setups involving an automated rotary evaporator, resulting in long-term cost savings alongside carbon footprint reduction.

- Implemented by e.g. [University College London \(Chemistry\)](#), [University of Southampton \(Chemistry\)](#), [University of Nottingham \(Pharmacy\)](#)
- [Acetone recycling: a case study in the undergraduate teaching laboratory](#), **RSC Sustainability**, 2026, **4**, 779
- [Distimatic solvent recycler for the School of Pharmacy at the University of Nottingham](#)

### Fume Hoods, NMR & vacuum pumps

- [Comparing Cryoprobe vs Room-Temperature NMR: Energy Consistency](#)
- [Designing and Operating Sustainable Laboratory Exhaust Systems](#)
- [Ducted vs ductless fume hoods](#)
- [The Future of Clean and Sustainable Vacuum Technology: Exploring the Advantages of Dry Vacuum Pumps](#)
- [Vacuum Pumps: A Greener Choice for Modern Industries](#)

## 6.3 Education & skills

### Education & skills resources

- [Beyond Benign](#)
- [Carbon Literacy Project](#)
- [RSC Climate change and sustainability resources for schools](#)
- [RSC Future Workforce report evidences employability aspects of sustainability skills \(see section 3:6 \*A lens of green chemistry and sustainability\*\)](#)
- [Chemical Education for Global Sustainability themed collection \(RSC Sustainability\)](#)

### Examples of university courses

- [BSc Natural Sciences stream in Chemistry, Ethics & Sustainability \(UCL\)](#)
- [MRes in Sustainable Materials & the Environment \(University College Cork\)](#)
- [MSc in Sustainable Chemistry \(UCL\)](#)

## 6.4 Sustainability networks

Multiple national and international networks for lab and university environmental sustainability offer resources, guidance and networking opportunities.

- [Environmental Association for Universities and Colleges \(EAUC\)](#)
- [Green Chemistry Teaching and Learning Community](#)
- [International Institute for Sustainable Laboratories \(I2SL\)](#)
- [UK Institute for Technical Skills & Strategy \(ITSS\) Environmental Sustainability Network](#)
- [UK Network for Sustainable Research \(UKNSR\)](#)

## 6.5 Research funder requirements & initiatives

Several funders have introduced environmental sustainability requirements, such as acquiring laboratory certification or planning for equipment sustainability.

- [Cancer Research UK environmental sustainability in research policy](#)
- [Concordat for the Environmental Sustainability of Research & Innovation Practice](#)
- [Wellcome Trust environmental sustainability funding policy](#)
- [UKRI Strategic infrastructure funding applications require evidence for planned steps to enhance the environmental sustainability of the proposed infrastructure](#)
- [UKRI Environmental Sustainability Strategy 2025-2030 states that generic requirements for environmental sustainability measures for UKRI investments will be developed by 2029 and an assessment tool for these measures in research calls will be rolled out via SPARKHub by 2030](#)

## 6.6 Acknowledgements

Thanks to the current and recent members of Heads of Chemistry UK for giving their time and expertise in interviews:

- Dr Thomas Anderson, University of Sheffield
- Prof Wendy Brown, University of Sussex
- Prof Craig Butts, University of Bristol
- Prof Claire Carmalt, University College London
- Dr Nicholas Evans, Lancaster University
- Prof Matthew Jones, University of Bath
- Prof Peter Licence, University of Nottingham
- Prof Jason Love, University of Edinburgh
- Prof Anita Maguire, University College Cork
- Prof Panagiotis Manesiotis, Queen's University Belfast
- Dr Lindsey J. Munro, Manchester Metropolitan University
- Dr Emma Rixon, Nottingham Trent University
- Dr Baljit Thatti, Kingston University
- Dr Derek Wann, University of Yor

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- Dr Amy-Louise Johnston (Programme Manager, Sustainable Chemistry)
- Dr Gemma Humby-Smith (Programme Manager, Sustainable Chemistry)
- Dr Kate Tustain (Programme Officer, Sustainable Chemistry)
- Dr Deirdre Black (Head of Science, Sustainability Strategy Lead)

## Appendix: Methodology

This handbook is based on interviews in January 2026 with 14 current or recent members of Heads of Chemistry UK. The following questions were used to guide discussion during the interviews.

### Opening questions

1. Please give a short overview of your department/school
2. From your perspective, what are the drivers for making sustainability changes in your department?
3. What are some things your department is particularly proud of achieving on sustainability?
4. As Head of Chemistry how would you summarise to senior university management what your department has been doing on environmental sustainability?

### Section A: Personal role and leadership

5. What has been your personal role in making sustainability related changes happen in your department?
6. How have you decided where to focus your personal time, energy and influence as a head of chemistry?
7. Have you drawn on any support to help you navigate and drive change?
8. Have there been any challenges or frustrations for you? How have you addressed these?

### Section B: Department and your institution

9. Are there formal sustainability requirements/expectations for your department? Where are these from?
10. Do you have any documents such as a departmental sustainability action plan or annual report?
11. How does environmental sustainability interact with financial considerations?

12. Do you interact with other departments or central university functions to progress sustainability?
13. What do you think is important in making sustainability changes happen at departmental level?
14. What benefits – intended or unintended – have you seen arising from engaging with environmental sustainability at a departmental level?

### Section C: People, roles, responsibilities and skills

15. Do you have people in your department with specific responsibilities related to sustainability? Are these a formal part of their role?
16. What is the role of the following people in environmental sustainability efforts in your department:
  - a. Technical and professional staff;
  - b. PhD students;
  - c. Research associates and fellows;
  - d. Academic staff?
17. Are there opportunities for people in your department to develop their skills in sustainability?
18. Have you or your colleagues made changes to UG or Masters curricula, teaching practicals or wider student experience to aid embedding sustainability?

### Section D: Final reflections

19. What do you see as the big priorities for your department on sustainability over the next 3-5 years?
20. What advice would you give a new Head of Chemistry when it comes to departmental sustainability?

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