UK Atomic Energy Authority

Sustainability Strategy 2023-2026

CONTENTS

Introduction

The role of fusion energy in an environmentally responsible future
In 2019, the UK became the first major economy to set a legal target of reaching net zero greenhouse gas (GHG) emissions by 2050. This requires the UK's total emissions by 2050 to be equal to or less than the emissions the country removes from the environment.

Fusion promises to be key to future low carbon energy production and the UK is proud to be a global leader in developing this transformative technology. The fuel sources used for fusion are available in abundance, from seawater and lithium. The fusion process is carbon free at the point of generation – it produces only safe helium emissions. Most of the waste material from a fusion powerplant is expected to be disposable as 'low-level' within 100 years of the machine's shutdown.

Fusion will be extremely efficient, creating many million times more energy, per kilogram, than burning coal, oil, or gas. Widespread fusion deployment is expected to happen after 2050 and our plan is for fusion to contribute to an environmentally responsible energy future in the second half of this century and beyond, alongside a range of other technologies and renewables.

UKAEA's sustainability goals
Until fusion is realised, it is just as vital that low carbon economies are sustainable in the long term as global energy use grows and conventional sustainable energy sources struggle to keep pace with demand. In line with this, UKAEA is firmly committed to delivering world-class research in an energy efficient manner to minimise the impact we have on our environment and to support and enhance the wider government net zero targets. UKAEA reports on the carbon emissions associated with our activities as part of the Greening Government Commitments (GGC) and in our Annual Report1. The Greenhouse Gas Protocol sets out the process for reporting emissions categorised in 3 scopes2. In line with government requirements, we report on our Scope 1 and 2 emissions, along with the business travel aspect of Scope 3. The UKAEA activities that fall under each category are shown in Figure 1 below.

The reports show that the energy used directly in the running of our fusion experiments is one of our main sources of energy consumption. Running fusion experiments is a highly energy-intensive activity and represents a short-term emission cost as an investment in a much longer-term sustainable future. For this reason, UKAEA is exempt from the standard GGC operational targets, and we exclude fusion related emissions from our own sustainability targets so as not to impact the development of fusion energy. To mitigate this impact, the electricity contracts that power the running of our Joint European Torus (JET) experiment are on Zero Carbon tariffs. The contracts that power the rest of the Culham site are on a standard tariff. All contracts are due for renewal in 2024. This will be done through CCS (Crown Commercial Service) agreements adopted by the Government. UKAEA will engage with CCS on the terms of the new agreements to support the adoption of Renewable and Zero Carbon tariffs.

[1] UKAEA Annual Report and Accounts, 2020/21, HC 577 - GOV.UK (***www.gov.uk***)
[2] Greenhouse Gas Protocol | (***ghgprotocol.org***)

In addition to the energy used directly by our fusion experiments, energy used for the running of our buildings, as well as energy used in the making of the products and services we buy, represent our most significant sources of greenhouse emissions. Although we do not formally report on all the Scope 3 categories, initial studies show that Scope 3 emissions are a significant part of UKAEA's carbon footprint, which exceeds both Scope 1 and 2 combined, and that those associated with purchased goods and services are the most significant of all the Scope 3 sub-categories.

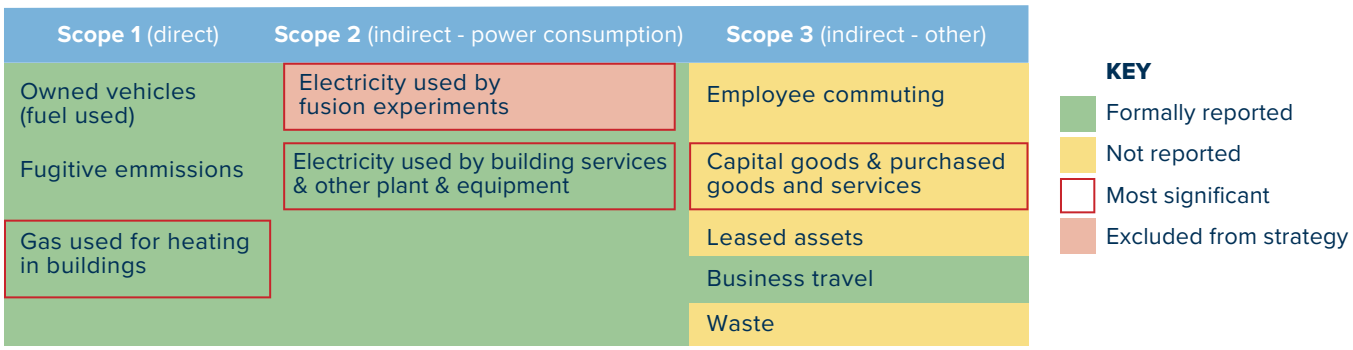

Figure 1. UKAEA activities by emission scope

Therefore, our three key sustainability goals are focused on reducing emissions in the areas which make the biggest contribution to our carbon footprint:

Goal 1 Design and construct new buildings and campus infrastructure with a focus on sustainability

Goal 2 Improve the energy performance of the existing estate

Goal 3 Promote sustainability in our supply chain

Alignment with UKAEA's Mission and Values

Our strong commitment to sustainability is inspired by UKAEA's guiding principles, as outlined in the Corporate Strategy.

▶ **Safety**	we have robust safety standards and management, which is integral to everything we do
▶ **Equality of opportunity**	we are committed to the recruitment and retention of a diverse workforce through processes not impaired by prejudice
▶ **Environmental sustainability**	we strive to implement the principles of environmental sustainability in the way we operate
▶ **Responsible management of public funds**	we always use our resources carefully and are accountable for our investment decisions

Alignment with the DESNZ Sustainability Strategy
Our sponsoring organisation, The Department for Energy Security and Net Zero (DESNZ) is the lead government department for energy and climate change. One of its priorities is to build a stronger, greener future by tackling climate change, and it is committed to improving environmental sustainability and achieving net zero. UKAEA's main three sustainability goals align very closely with DESNZ goals, such as:

- encouraging greater energy efficiency
- seizing the opportunities of net zero to lead the world in new green industries

Scope of this strategy
Energy used directly in the running of our fusion experiments is excluded from this strategy to not impact the crucial development of fusion energy. The experimental programme of the Joint European Torus (JET) at Culham will finish by the end of December 2023 and UKAEA will be responsible for the safe decommissioning of the JET facility. The sustainability aspects of the JET Decommissioning and Repurposing Project (JDRP) are not included in the scope of this strategy as the project plans are in their very early stages of development. The programme will have a strong focus on repurposing, waste reduction and innovation, and a separate sustainability strategy will be developed to support this.

Included in the scope of this strategy are all other UKAEA activities which have a direct or indirect impact on environmental resources or greenhouse gas emissions. This includes the building and transport infrastructure offered to our tenants but excludes the impact of their specific operational activities. UKAEA activities at other sites that we occupy are also included.

The strategy excludes UKAEA real estate at the Harwell Campus, which is the responsibility of separate organisations under leasehold and contractual arrangements. The Harwell operational team is developing a sustainability strategy for Harwell, and we intend to share best practice between the campuses.

UKAEA is also driving the Spherical Tokamak for Energy Production (STEP) project. This is a staged Programme to design and build a compact fusion reactor, based on the spherical tokamak. This supports UKAEA's goal of enabling the delivery of sustainable fusion power plants. The current engineering, procurement and support facilities involved in the design work at the Culham site are included in the scope of this strategy. However, this strategy excludes the environmental and sustainability aspects of the future tokamak itself. The local aspects from the newly selected construction site at the West Burton site in Nottinghamshire are also excluded.

A separate environmental case and sustainability strategy have been developed for these elements of the project. A new commercial vehicle has been incorporated called UK Industrial Fusion Solutions Ltd (UKIFS) and this will establish a programme delivery organisation that sits underneath UKAEA. It will introduce external partners that can provide engineering, construction, and delivery performance expertise. Currently the STEP programme is preparing to migrate to UKIFS. Once the transition to UKIFS is fully executed, the strategy will migrate to UKIFS and will incorporate all the partners including engineering,

GOAL 1

NEW BUILDINGS AND INFRASTRUCTURE

Design and construct new buildings and campus infrastructure with a focus on sustainability

All new buildings will -
Be designed to **BREEAM Excellent**[3] in line with the Government Buying Standards (GBS) requirements and the Local Plan. Any building that does not fall into the BREEAM classifications and is seeking to be exempt will carry a written justification.

Below are some examples of the key targets adopted as part of BREEAM for each project. These may differ slightly from one building to another depending on the specific credits targeted to achieve the Excellent Rating.

- minimum of **10% electric vehicle charging points** in each new car park
- a minimum of **1 cycling storage facility per 10 occupants**
- potable **water usage reduction** by at least 25% compared to the BRE baseline
- **sustainable drainage systems (SuDS)**, including natural infiltration, used to ensure the peak run-off rate is no greater post-development than it was pre-development
- materials to have **Responsible Sourcing Certification Schemes (RSCS)**, suppliers and contractors to have **Environmental Management System and provide Environmental Product Declarations** certificates
- construction waste and **diversion from landfill** from excavation, demolition and non-demolition waste targets specified
- **low Global Warming Potential (GWP) refrigerants** used
- **low operational and embodied carbon** through energy efficiency and renewable energy measures - see objectives below which go beyond BREEAM to target net zero carbon

Achieve **net zero operational carbon status and low embodied carbon as** defined by the UK Green Building Council. This aligns with the UK's net zero targets and the Government Functional Standard for Property (GovS 004). New projects will specify this requirement in the early design stages so it can be adequately costed for and will achieve net-zero operational carbon solely through energy reduction and renewable technology measures, without carbon offsetting.

Be **100% electricity powered** unless there is a specific operational requirement for using gas.

Source **IT equipment** in line with the Government Buying Standards for the sustainable procurement of office ICT equipment and with the UKAEA Green IT Strategy.

UKAEA will continue to encourage **sustainable means of transport** in accordance with our Travel Plan.

[3] BREEAM (Building Research Establishment Environmental Assessment Method) is the world's leading sustainability assessment method for building projects. The UK Government's Green Buying Standards (GBS) require that new projects achieve an Excellent Rating. The only rating higher than this is BREEAM Outstanding. As explained in the introductory section, energy efficiency and net zero carbon aspects are UKAEA's key sustainability priority for new building projects. Therefore, UKAEA has made the decision to continue pursuing the Excellent route, while focusing efforts and resources on achieving net zero operational carbon and low embodied carbon for new projects.

New developments are to maintain and improve biodiversity on site in line with Local Authority **Biodiversity Net-Gain** (BNG) requirements as a minimum, striving to retain and enhance tree canopy cover and vegetation throughout the campus and along the boundaries.

For **new developments** that UKAEA will **occupy but not own**, all the above requirements will be specified, and we will work with the developers to achieve where possible the same sustainability standards as for our new buildings. Where we enter a **new lease** in an existing building, we will use sustainability criteria in the selection of the building and will work with the building owner to identify potential energy efficiency improvements.

GOAL 2
EXISTING ESTATE
Improve the energy performance of the existing estate

Establish energy usage and carbon emission baseline for the existing estate, to provide a **building-by-building** account of energy consumption.

Buildings that are part of our old building stock (constructed around 1965) and are due to remain on site post 2025 will have the **facades refurbished** to improve insulation and energy performance. This will be done on a yearly rolling programme of upgrades.

Improve the thermal efficiency of the roof for the old building stock on a rolling programme of insulation upgrades.

All buildings that are assessed as suitable and have adequate structural integrity will have **solar PV panels installed**. This will be done on a on a yearly rolling programme of upgrades.

Buildings with justifiable high hot water use will have **solar hot water systems** installed.

Set **long-term emission reduction targets** and create an **estate decarbonisation plan** for the existing estate. This will be informed by the baseline building-by-building information and will show our net zero targets for 2050 as well as the interim milestones we need to achieve, in line with the UK Government long-term net zero strategy.

Include energy usage and carbon emission data for facilities that UKAEA **occupy but do not own** in our Scope 3 emission data reporting. Identify and raise any inefficiencies and work with the building owners to address where possible.

GOAL 3
SUPPLY CHAIN
Promote sustainability in our supply chain

Provide suitable training materials to ensure that project managers and contract project managers are **trained** on how to integrate environmental sustainability aspects in line with the Government's Social Value Model (SVM)[4].

Integrate robust environmental **sustainability criteria** within the procurement process. This is to ensure the performance of the contract results in environmental benefits, including working towards net zero greenhouse gas emissions.

For contracts that are in scope of Procurement Policy Note PPN06/21[5] (contracts over £5m), selection criteria to include a requirement for the bidding suppliers to provide a **Carbon Reduction Plan** confirming the supplier's commitment to achieving net zero by 2050 in the UK and setting out the environmental management measures they have in place, and which will be in effect and utilised during the performance of the contract.

Quantify and work to reduce **Scope 3 supply chain emissions** focusing on priority areas based on spend and risk, engaging with strategic suppliers and integrating this within existing procurement activities.

[4] Action Note PPN 06/20 Procurement Policy Note – Taking Account of Social Value in the Award of Central Government Contracts

[5] Action Note PPN 06/21 Procurement Policy Note – Taking Account of Carbon Reduction Plans in the procurement of major government contracts

Governance and stakeholder engagement
The Sustainability Strategy is reviewed and approved by the UKAEA Executive Committee and the CEO. Sustainability projects are owned by the relevant teams across the organisation and are supported by the Environment and Sustainability Manager. All updates related to sustainability achievements and strategy are communicated internally through regular staff talks, emails and the UKAEA intranet. Employees are encouraged to participate and submit their views through staff polls and an online suggestions box on the Intranet.

Progress against sustainability objectives is reviewed regularly as part of the relevant UKAEA forums and committees. Recommendations and aspects requiring higher-level decisions are presented to the Executive Committee. Yearly progress on the objectives is reported as part of the Sustainability Section of our Annual Report.