

Pilot Report

2021-2022

March 2023



Acknowledgements

We thank Mr Martin Farley, *director* at Green Lab Associates, for his guidance and leadership throughout the development and coordination of the *GreenED* pilot project.

We thank all participating sites, pilot-site leads, Environmental Specialist Interest Group (ESIG) members and *GreenED* working group members for their dedication and contribution to the *GreenED* programme.

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Mr Nigel Pinamang and Elizabeth Adelodun, PhD – for working on the manuscript.

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Executive Summary

Emergency Departments (EDs) are frontline, resource-intensive environments. ED clinicians and the Royal College of Emergency Medicine (RCEM) are working towards increased mitigation of emergency care's environmental impact as part of wider net-zero National Health Service (NHS) targets. In accordance with this, the *GreenED* project is an RCEM-led strategic initiative that has the potential to make a significant contribution to this ambition, as it is designed to drive and embed environmental sustainability in emergency medicine (EM). Since there are an estimated 130 EDs in England and Wales alone, it is crucial to understand how these sites of acute-care provision can mitigate their environmental impacts.

The *GreenED* Framework version 1.0, developed by RCEM's Environmental Specialist Interest Group (ESIG), is unique in being the first grassroots-led sustainability framework in an NHS hospital setting. It empowers EM practitioners to take ownership and initiate change at the shopfloor level. The user-friendly *GreenED* Framework contains immediate (bronze), medium (silver), and long-term (gold) actions that ED staff can take to integrate environmental sustainability into everyday practice. It provides the means for them to evaluate the impact of those actions and feeds into wider sustainability targets at both Trust and national levels. Through *GreenED*, we anticipate that EM as a specialty will be well-placed to contribute significantly to NHS England's world-leading strategy to deliver a net zero NHS by 2040.



Green 1.0

GreenED completed an eight-month pilot (*GreenED* 1.0) in eight EDs in June 2022. *GreenED* 1.0 evaluated a practical framework that staff could use to drive environmental sustainability in the ED setting.

GreenED 1.0 Aims

1. Standardisation of actions that ED staff can implement at work to improve environmental sustainability while maintaining or improving standards of patient care.
2. Engagement and support of participating EDs to execute the *GreenED* Framework 1.0.
3. Collate feedback and lessons from participating EDs in preparation for the development of the *GreenED* 2.0 in the next phase.

GreenED 1.0 Highlights

1. Kickstarter initiative for environmental sustainability in EDs



Pilot sites indicated that having a framework was a helpful prompt to initiate action towards reducing the environmental impact of emergency care. Eight sites engaged in the implementation of *GreenED* Framework version 1.0 and addressed Bronze actions.

A significant outcome in terms of securing organisational support/buy-in was achieved at Royal Preston Hospital. The *GreenED* site lead has been allocated one day per week by their manager to take forward sustainability initiatives.

2. Low Carbon Inhalers



An example of one such initiative at the hospital was the switch in the use of a Ventolin inhaler to Salamol, which is a lower volume metered-dose inhaler. This change saved both carbon emissions and costs.

3. Reduced Cannulation

Almost all pilot sites initiated reduction in unnecessary cannulation, with significant associated cost and carbon savings.



4. Reduction of use of medical gases

The Royal Devon and Exeter ED was able to reduce significantly the use of bottled Entonox by approximately 1000L per week.



5. Outcome: Quantified carbon and financial savings



In this report we summarise detailed outcomes from each site, including significant carbon and financial savings (15 tonnes of carbon dioxide equivalent (tCO₂e) and at least £40,000).

Introduction

The NHS is responsible for 4% of the UK's total carbon emissions (carbon dioxide equivalent, CO₂e) and over a third of its public-sector emissions.

In 2019, the NHS became the first major economic entity in the world to make a legally binding commitment to cut emissions of carbon dioxide and other greenhouse gases to net zero by 2050. In 2020, the NHS chief executive launched the 'For a Greener NHS' campaign, which was part of a multi-pronged approach to inject momentum into this national drive towards carbon neutrality. Later that year, NHS England announced its plan to achieve a netzero NHS by 2040 – with an interim target of an 80% reduction in CO₂e by 2028-2032. It was the first health system in the world to make such a plan.

The emergency medicine community, in the UK and internationally, has started to mobilise around the climate agenda. A core element of this transition will be the grassroots mobilisation of NHS staff and Trusts to accelerate existing sustainability work that is underway at the local level. In 2019, RCEM – in response to suggestions proposed by concerned members and growing public awareness – divested from fossil fuels, made a formal declaration that there was a climate emergency, co-launched the annual Lancet Countdown Report, and started to reduce the environmental footprint of the college and its activities. It also set up the ESIG, which was tasked with researching and developing ways to assess and improve the environmental sustainability of everyday clinical practice as part of a wider advocacy and education remit.






There are an estimated 130 EDs in England and Wales, and more in Scotland and Northern Ireland. Therefore we must find out how these sites of acute-care provision can mitigate their environmental impacts.



GreenED Pilot Methodology and Timeline

The *GreenED* Framework is based on the well-established Laboratory Efficiency Assessment Framework (LEAF) (depicted in the infographic below). The LEAF programme is a certification in sustainable laboratory operations that is managed by University College London.

LEAF Programme Framework

CATEGORY	Bronze	Silver	Gold
 Waste	Provide recycling bins in the lab	Single-use plastic waste has been reduced (guidance provided)	Recycling rates have been increased, or overall waste produced has been decreased
 People	Samples owned by departing staff are cleared or tracked	The lab has engaged other labs on LEAF and sustainability	One action to reduce travel has been implemented
 Sample & Chemical Management	Labels are legible, and there's a common labeling system in place	Procedures are in place in case cold storage equipment breaks down	At least 80% of all samples and/or chemicals are clearly catalogued
 Equipment	Equipment is turned off when not in use	There is a system in place for communal equipment booking	Excess equipment is repaired, sold, and/or donated
 Ventilation	There is a clear reporting system for building issues	Fume cupboard sashes are kept closed when not in use	Solvent vapours are condensed and disposed and not released into the atmosphere



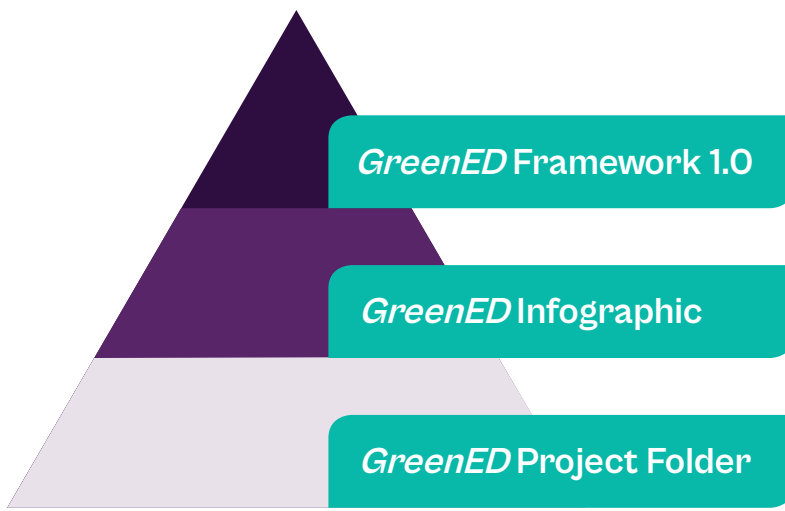
Initially, ESIG engaged with a working group of junior doctors, consultants and an advanced care practitioner to discuss actions that might be feasible in an ED setting. This was condensed into the *GreenED* Framework 1.0 (depicted in the infographic below). The *GreenED* project team, after developing the framework, engaged with a group of ED clinicians who were interested in joining the pilot cohort.



ED clinicians from interested pilot sites attended an induction webinar in November 2021, at which background information about the *GreenED* programme was presented, as was its potential to contribute to our collective drive towards the achievement of the net zero NHS targets by 2040. This initiative mirrored the successful LEAF programme.

Pilot sites were encouraged to establish a green group as a crucial first step in embedding the *GreenED* programme at participating sites. Green groups are best positioned to solicit and receive adequate support for the implementation of sustainability activities within an ED setting while influencing key parties at the Trust or hospital. At the end of the induction session, all pilot sites were equipped with associated resources, including the *GreenED* Framework 1.0, infographic and folder.

Ten EDs registered and eight were able to submit successfully. To assess how each pilot site addressed the criteria in the bronze category, a review form was completed to indicate what actions had been taken to address *GreenED* Framework actions. Following this, a discussion with the pilot site lead was arranged, and an assessment was conducted to enquire about and verify actions taken to address Framework 1.0 actions and to understand what impact had been achieved. The following section provides a summary of outcomes at participating sites.



***GreenED* Framework 1.0 Resources**

Pilot sites were provided with *GreenED* Framework 1.0, the resources folder, and infographic. Monthly catch-ups were hosted for all, and submissions were reviewed at the end of the eight-month pilot.

GreenED Framework 1.0 resources for participating sites

Participating Hospital Sites

University Hospital of North Tees


The University Hospital of North Tees is part of the North Tees and Hartlepool NHS Foundation Trust, which provides services to more than 400,000 people living in Stockton-on-Tees, Hartlepool, East Durham and parts of Sedgfield (North East England).

Bronze actions addressed in GreenED Framework 1.0:

- ◇ Creation of a *GreenED* local group with support from a consultant
- ◇ Engagement of the central sustainability/operations team to purchase a trust-wide Sterimelt unit, which enables the recycling of single-use plastics otherwise destined for offensive waste
- ◇ A survey to audit whether good practice was being maintained with the already implemented reduced cannulation process

Quantified carbon and financial savings

- ◇ £290 or 393kg CO2e (due to work on monitor brightness of computers (PCs))




North Tees - A Pilot Project

James Tullie ST4

Overview
Ran from December 2021 - June 2022. One of 8 pilot sites in England. 14 group members in total including nursing staff, ACPs, junior doctors and consultants - all voluntary!

Aim
We tried to tackle 14 "Bronze" aims as outlined in the project framework. Posters displayed an abbreviated framework, an example part of the poster is shown below.



How
The North Tees group met monthly initially then two monthly latterly. All meetings were via Teams (greener) and were minuted, mostly by one of the ED secretaries. In addition the project leader (JT) met monthly with the other pilot sites via Teams to share learning and progress. The framework was broken down in detail in a spreadsheet and ultimately this was submitted back to the Green ED pilot leader who collated the data and submitted to RCEM. An example section of the completed framework is below (this is a briefer section. Each of the 14 aims had a section of the same format)

Domain and Outcome	#	Level	Criteria	Rationale	Tips & Advice	How did you address this?	Pilot Site Feedback
	1	Bronze	This ED has reduced its avoidable waste streams, and appropriate bins are located where necessary (including recycling, clinical waste, general waste, and compost, where available). These should be clearly marked/signage.	Conduct a waste audit to identify avoidable waste streams, offensive waste, and particularly health waste. Health waste will result in significantly more carbon emissions than recycling. Where possible, reduce waste which enable easy recycling will result in improved sustainability of the ED.	<ul style="list-style-type: none"> Ensure that any new waste streams have the approval of facilities, and that they can be packed up by cleaning staff appropriately. Engage staff in a positive manner, as introducing new waste streams may require updated training and a change in practice - recycling streams in particular are a topic of focus - can you improve your recycling ability? 	There is an area that has been much discussed at the meetings but progress has been limited, partly due to other pressures in practice. We have had a dialogue with the waste manager for the hospital and obtained a list of things that are prohibited by the commercial partner for use. They had had some bin stickers which we can access. Recycling bin identification remains a challenge. Following feedback from other pilot sites we are currently in discussion about setting a recycling station separate from the main ED throughfare that is visible, we can encourage staff to use that in the location that should result in less opportunistic dropping of non-recyclable items.	Waste streams are a big and challenging area, hearing about experiences from other sites was valuable. This was actively being engaged with the procurement team on issues relating to waste and recycling that range beyond these bronze aims and this has proven valuable.

Outcome
So what did we actually achieve?! We were keen to make some tangible changes during this project - as we know this can be difficult. Here a selection of a few changes:

- Screen brightness was reduced on the majority of computers in the department
- Reusable plastic beakers were purchased with the aim of stopping polystyrene cup use (a recycled dishwasher was fitted to aid this). It remains to be seen how successful this is
- "Turn it off" stickers were put on all cubicle lights

What about wider benefits?

- Through the formation of the group and the associated publicity we raised the profile of the issue throughout the department. There was good staff engagement and senior involvement. Anecdotally most staff have some bugbear in relation to resource wastage - tap into this!
- We had some good link ups with the respiratory team and public health teams developing a QIP around inhalers and linked with the procurement team which lead to the trust actively investigating purchasing a sterimelt machine
- The project was presented at the hospital wide Audit and Clinical Effectiveness meeting to spread the word. Hopefully this pilot along with pilots at the other sites will influence ongoing work from RCEM



Challenges?

- Clinical pressures and staff time (as ever). NHS trusts have specific sustainability targets - this needs to be resourced.
- Lack of progress - areas such as waste streams (complex) and inhalers (also complex) hit near brick walls though not for lack of trying.

What Next?
The climate crisis isn't going away and sustainability is a huge issue in healthcare including emergency care. Hopefully the Green ED project will grow stronger. Why shouldn't all departments in the North East get on board with this and share good practice?

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King's College Hospital


King's College Hospital is a major teaching hospital and trauma centre, managed by King's College Hospital NHS Foundation Trust (London).

Bronze actions addressed in GreenED Framework 1.0:

- ◇ A *GreenED* group was created
- ◇ Budget was allocated for the purchase of new bins for recycling
- ◇ Campaign to promote use of dry-powder inhalers
- ◇ Drive towards reduction of cannulation
- ◇ Removal of single-use cups (in collaboration with the central team on a wider project)
- ◇ Ongoing review of the use of Entonox (in collaboration with the central team on a wider project)

Quantified carbon and financial savings

- ◇ Likely carbon savings due to promotion of dry-powder inhalers



The Royal College of Emergency Medicine | NHS | King's College Hospital

GreenED

King's ED is excited to be a part of the RCEM GreenED pilot project, paving the way for the future of sustainable emergency medicine.


→ "Climate change is the single biggest health threat facing humanity" WHO, 2021


We have "a brief and rapidly closing window of opportunity to secure a liveable and sustainable future for all" IPCC, 2022 ←

1 Complete our survey to share your thoughts!
Scan QR code on left

2 Join our admin-only WhatsApp group for updates!
Scan QR code on right

*No spam... Just the occasional dollop of wisdom from our GreenED team

 **Suggestions**
Tinyurl.com/kinggreened

 **WhatsApp Group**
Tinyurl.com/greenkings



Royal Preston Hospital

The Royal Preston Hospital is an acute general hospital in Preston, Lancashire, part of the Lancashire Teaching Hospitals NHS Foundation Trust (North West England).

Bronze actions addressed in GreenED Framework 1.0:

- ◇ All bronze criteria were addressed; most were met
- ◇ Switch to low-carbon inhalers. Salamol, a low-volume, metered-dose inhaler, was used as a replacement for Ventolin, due to its lower carbon emissions, easy utilisation by children under eight years old, and lower cost
- ◇ Monitor brightness reduced on 56 PCs
- ◇ Significant outcome: *GreenED* site lead afforded one day per week by the manager to take forward sustainability initiatives

Ongoing goals

- ◇ Drive to reduce fitting of unused cannulas
- ◇ Review of cutlery usage (in collaboration with the central sustainability team)

Quantified carbon and financial savings

PC brightness adjustments resulted in savings of 325kg CO₂e and approximately £240 in energy costs

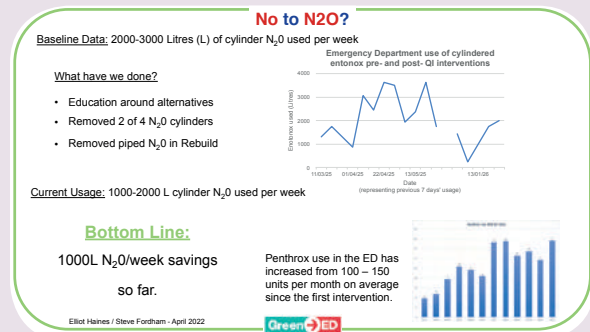


Royal Devon and Exeter Hospital

The Royal Devon and Exeter Hospital is a large teaching hospital situated in Exeter, Devon, England. It is run by the Royal Devon University Healthcare NHS Foundation Trust (South West England)

Bronze actions addressed in GreenED Framework 1.0:

- ◇ All bronze criteria were addressed and nearly all were successfully implemented
- ◇ Significant reduction in the use of bottled Entonox by approximately 1000L per week
- ◇ Monitor brightness reduced on 42 PCs
- ◇ Fitting of at least 208 cannulas avoided during the survey
- ◇ Reduced number of clotting tests conducted (by approximately three per day)
- ◇ Initiation of a reusable facemask trial (via Revolution-Zero)
- ◇ Printers consolidated to three central network printers; baseline paper usage has been measured in sheets printed per week
- ◇ QR codes were implemented to replace the six advice leaflets most commonly given to patients



Quantified carbon and financial savings

- ◇ Reduction in use of cannulas by 208 indicates emissions reduction of 87kg CO₂e; equates to approximately £2,049 saved
- ◇ The PC effort: £300 in cost savings, or 300kg CO₂e in emissions
- ◇ Reduction of Entonox use by 1000L will result in avoidance of 14.5t CO₂e of emissions



Royal Sussex County Hospital

Royal Sussex County Hospital is part of the Brighton and Sussex University Hospitals NHS Trust (South East England).

Bronze actions addressed in GreenED Framework 1.0:

- ◇ A small group was created
- ◇ Changes were made to the brightness of 50 PCs
- ◇ Site lead recently obtained funding to initiate a trial at two sites of reusable suture packs, leading to potential long-term scope for carbon emission reductions and cost savings

Quantified carbon and financial savings

- ◇ Change to brightness of PCs probably led to £354 in energy savings and 0.5t CO₂e emissions per year avoided



Southmead Hospital

Southmead Hospital is part of the North Bristol NHS Trust (South West England)

Bronze actions addressed in GreenED Framework 1.0:

- ◇ A green group was formed
- ◇ A proactive and insightful engagement was established with the carbon and energy manager
- ◇ Reduction in fitting of unused cannulas by 70%
- ◇ Sleep settings and brightness of PCs altered across the department

Ongoing goals


- ◇ Reduced use of nitrous oxide, while Pentrox has already been available

Quantified carbon and financial savings

- ◇ An estimated 0.5t CO₂e (£354 per year) were saved through PC action
- ◇ Estimated reduction of fitting of cannulas (by 10 cannulas per day) resulted in 1.5t CO₂e and £35,952 saved annually

70% of cannulas inserted
in *EDOU* are never used.

ASK
Does this patient look well?
Can they take medications and fluid PO?
If yes – they probably DON'T need a cannula



John Radcliffe Hospital

John Radcliffe Hospital is part of Oxford University Hospitals NHS Foundation Trust, a world-renowned centre of clinical excellence and one of the largest NHS teaching trusts in the UK (South East England).

Bronze actions addressed in GreenED Framework 1.0:

- ◇ Green group created with the involvement of several consultants
- ◇ An email group and a Teams channel were set up for communications, as well as a *GreenED* notice board
- ◇ 24 orange bins were replaced with 12 black bag bins; this initiative has inspired other departments to review their waste segregation practices
- ◇ Reuse of copper wire. Within a paediatric area, probes that contain copper are now being collected for copper recycling, as opposed to being sent for incineration (10kg has been collected so far)
- ◇ Stopped printing of unnecessary stickers
- ◇ Regarding travel, cycle routes for staff and patients were highlighted, and awareness raised of showers and personal storage spaces to facilitate cycling
- ◇ Removed access to Entonox, which is likely to have led to significant carbon emission reductions



Quantified carbon and financial savings

- ◇ Reuse of 10kg copper will lead to avoidance of at least 42kg CO₂e of emissions
- ◇ Change from 24 bins of offensive waste to 12 bins of general waste has saved at least £558 in waste costs, and 68kg CO₂e



University College Hospital

University College Hospital (UCLH) is a major teaching hospital, part of the part of the University College London Hospitals NHS Foundation Trust (London).

Bronze actions addressed in GreenED Framework 1.0:

- ◇ A green team was created that included a consultant, and was notably supported by the central UCLH sustainability team
- ◇ Alignment of *GreenED* initiative with central initiatives
- ◇ Ongoing engagement with the central IT services to ensure that changes made to PCs can be permanent and potentially hospital-wide
- ◇ Installation of a dishwasher, which permits the reuse of cutlery
- ◇ Introduction of general waste bins
- ◇ Ongoing projects to reduce unnecessary cannulation
- ◇ Nitrous leaks stopped

Quantified carbon and financial savings

- ◇ Introduction of 11 general waste bins means that the contents of 25 recycling bins are now being appropriately recycled



GreenED 1.0 Conclusion

The *GreenED* 1.0 team engaged ten pilot sites to implement the Framework 1.0 in November 2021. At all sites, activities were led by an active local group, members of which met the RCEM project team for bespoke support, attended monthly catch-ups that served as a means to maintain engagement with all sites, and shared learning from each other's efforts.

Eight sites successfully addressed all criteria for bronze accreditation. Of these, two sites (the Royal Preston and Royal Devon & Exeter Hospitals) effectively implemented all bronze actions. They took things further by addressing some actions in the silver and gold categories. These significant achievements illustrate that an evidence-based *GreenED* Framework can be successfully implemented in EDs across the UK. In the online-based *GreenED* Framework 2.0, we will develop a pragmatic grading structure to recognise EDs that address or achieve all actions in one category as well as elements of a higher category.

The pilot was conducted during the COVID-19 pandemic. This posed a notable challenge for all sites, as the resources and time that could be provided were limited. Despite this difficulty, most of the sites were able to register overall positive results. In total, the pilot is estimated to have saved:

- at least 15t CO₂e in emissions
- At least £40,000 through combined reductions in waste, energy and cannulation. The impact is probably more than estimated because some outcomes have not been analysed.

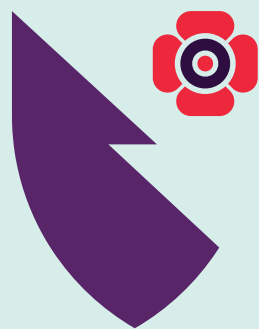
The savings were focused on the criteria in bronze that would lead to direct financial savings (improved recycling as opposed to offensive waste usage, energy savings from PCs, and reduced use of cannulation).

Beyond the pandemic, sites relayed common themes regarding the challenges they faced. The shared challenges included a lack of protected time and limited or no senior support, particularly at *GreenED* pilot sites that did not have actively involved consultants.

As we advance, RCEM's ESIG and staff (including those from IT, communications, policy, events and corporate services) will work closely with Greener NHS and will collaborate with stakeholders within the EM community to embed environmental sustainability in EDs throughout the UK.

RCEM's *GreenED* Framework 1.0 is being developed into Framework 2.0; a fully integrated package that includes an online portal for data collection and submission with administration, database and technological support, and RCEM accreditation for the achievement of all actions within a given Framework level (bronze, silver and/or gold). Participating EDs will be recruited through promotional activities as part of a detailed communications strategy to sign up for *GreenED* accreditation in 2023.

As a result of this pilot...have' to 'Following on from the pilot, RCEM now has expressions of interest from nine EDs to adopt *GreenED* Framework 2.0. Participating EDs will be supported by ESIG and other RCEM staff, drawing on expertise from key partners throughout the year to achieve bronze and/or silver and gold actions. This support will take the form of monthly contact sessions and one-to-one guidance for individuals on an ad-hoc basis. In addition, they will have access to the digital *GreenED* Toolkit and exclusive access to guidance included in the online *GreenED* portal to support them to achieve sustainability actions.



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