Sustainability Assessment of Cataract Surgeries using the Eyefficiency Application

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Introduction

Healthcare contributes 4–5% of global GHG emissions.[1] Cataract surgery, the world's most common surgical procedure, shows wide environmental variability—from 6 kg CO_2e per case in India to 181.9 kg CO_2e in the UK.[2,3]

Eyefficiency, a web-based tool by the RCOphth Sustainability Group, assesses the carbon footprint of cataract surgery, identifies emission hotspots, and benchmarks performance globally.[4]

Methods

An observational study was conducted at Maidstone Hospital to assess surgical productivity, cost, and environmental impact using the *Eyefficiency* tool—an open-access, web-based platform developed by the Royal College of Ophthalmologists to benchmark sustainability in cataract services.

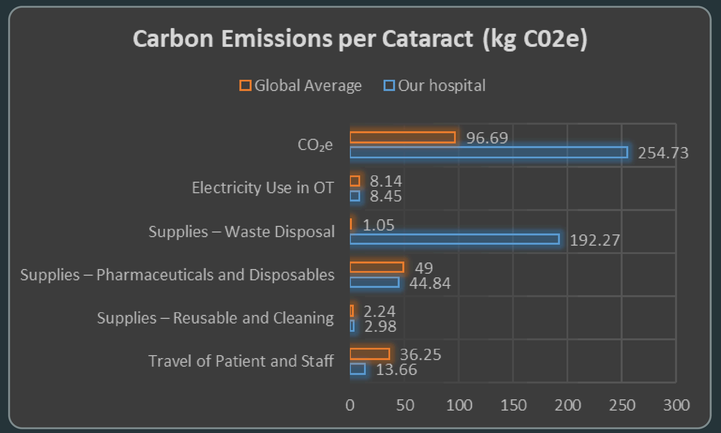
Data collected included:

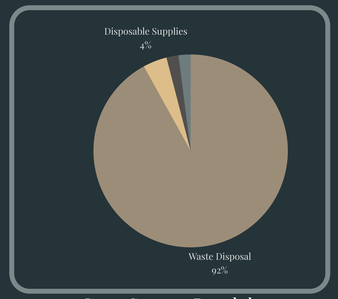
- Service structure, appointment scheduling, and staffing
- Energy use, theatre operations, and waste disposal
- Use of consumables (pharmaceuticals, instruments, linens)
- Staff and patient travel patterns through surveys
- Time-and-motion studies over 29/11/2024 – 06/12/2024

Eyefficiency Application

Results

	Our hospital	Global Average
CO_2e	254.73	96.69 kg
Comparison: Distance driven by a passenger vehicle	1024.8 km (636.8 miles)	389 km (241.7 miles)
Waste generated	3.29 kg	0.82 kg
Total cost	£ 652.23	£ 235.91





Co2e Source Breakdown

Conclusion

Cataract surgeries at Maidstone Hospital show a significantly higher environmental impact compared to global benchmarks. The Eyefficiency tool enabled identification of key carbon hotspots and actionable areas for improvement.

🔍 Key Findings

- **CO_2e per case: 254.73 kg** (vs. global average of 96.69 kg)
- **Waste generated per case: 3.29 kg (vs. 0.82 kg globally)**
- **Main emission sources: Waste disposal and single-use consumables**

Recommendations

Carbon hotspots to focus on

- Reduce single-use items adopt reuseable gowns, caps
- Optimize pharmaceutical use
- Improve waste segregation and recycling- switch from Chemical waste to Offensive waste, lower carbon footprint
- Enhance building energy efficiency

References

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4.Goel H, Wemyss TA, Harris T, et al. Improving productivity, costs and environmental impact in International Eye Health Services: using the 'Eyefficiency' cataract surgical services auditing tool to assess the value of cataract surgical services. BMJ Open Ophthalmology 2021;6:e000642.