

Policy & practice for environmentally sustainable products in healthcare

joining the dots

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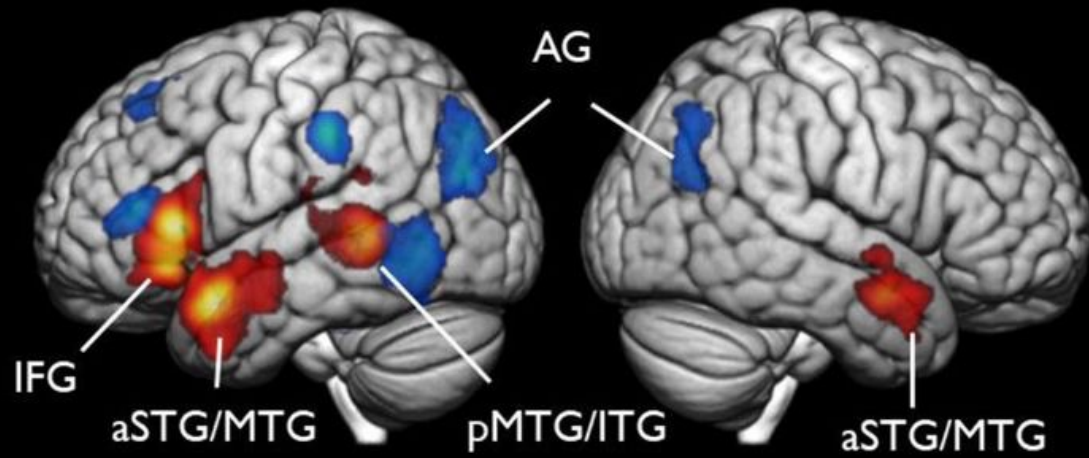
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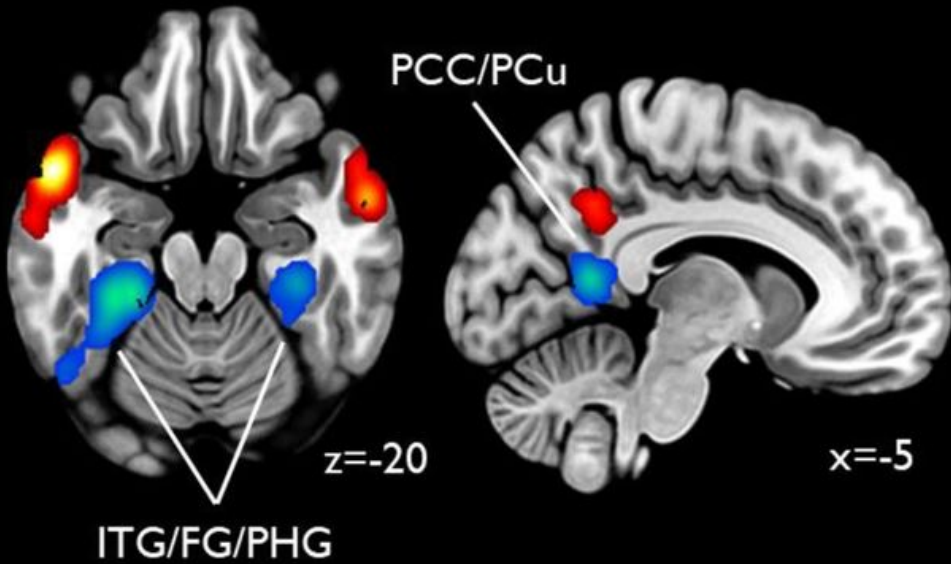
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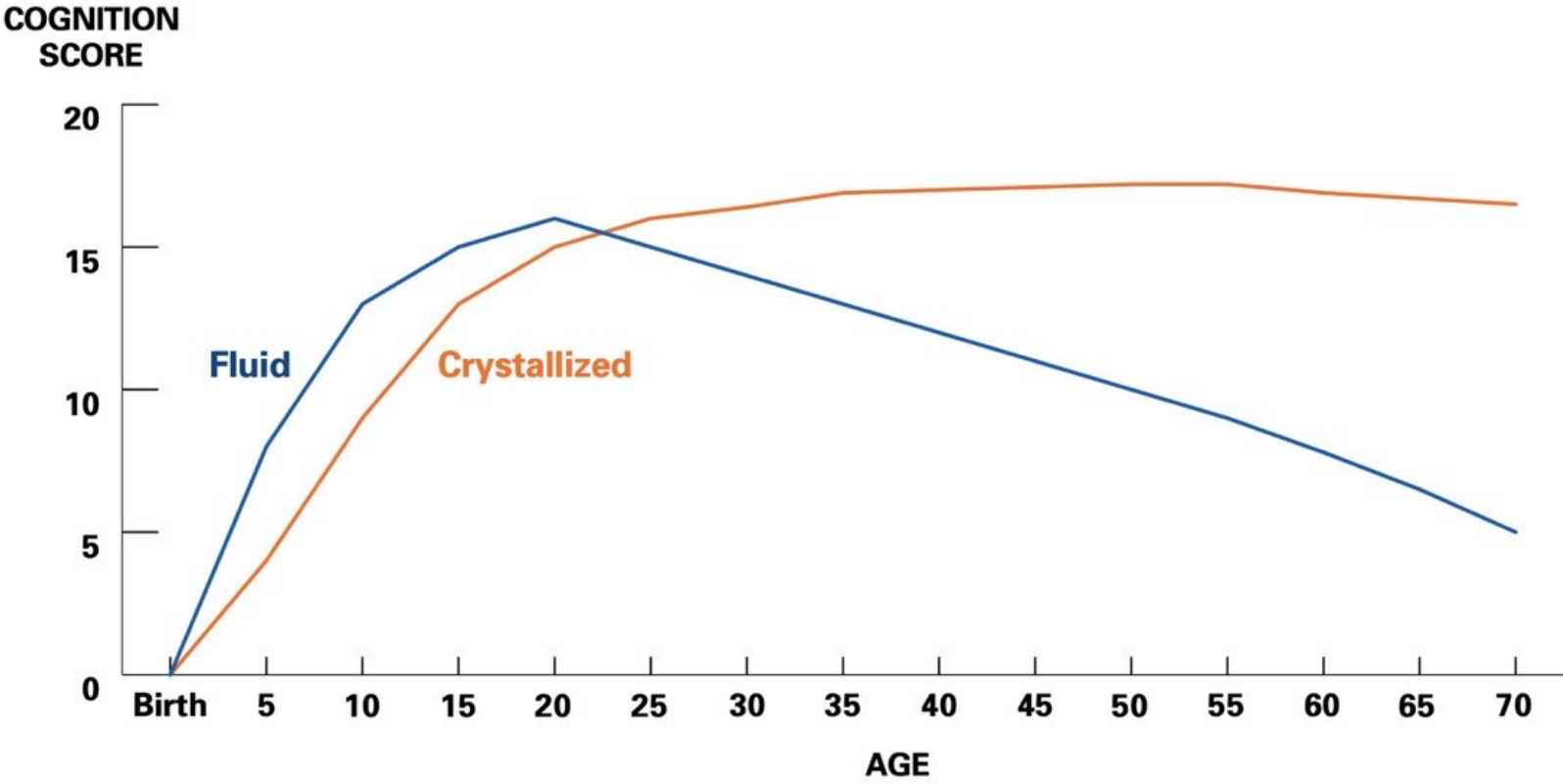
January 6, 2025





abstract
concrete

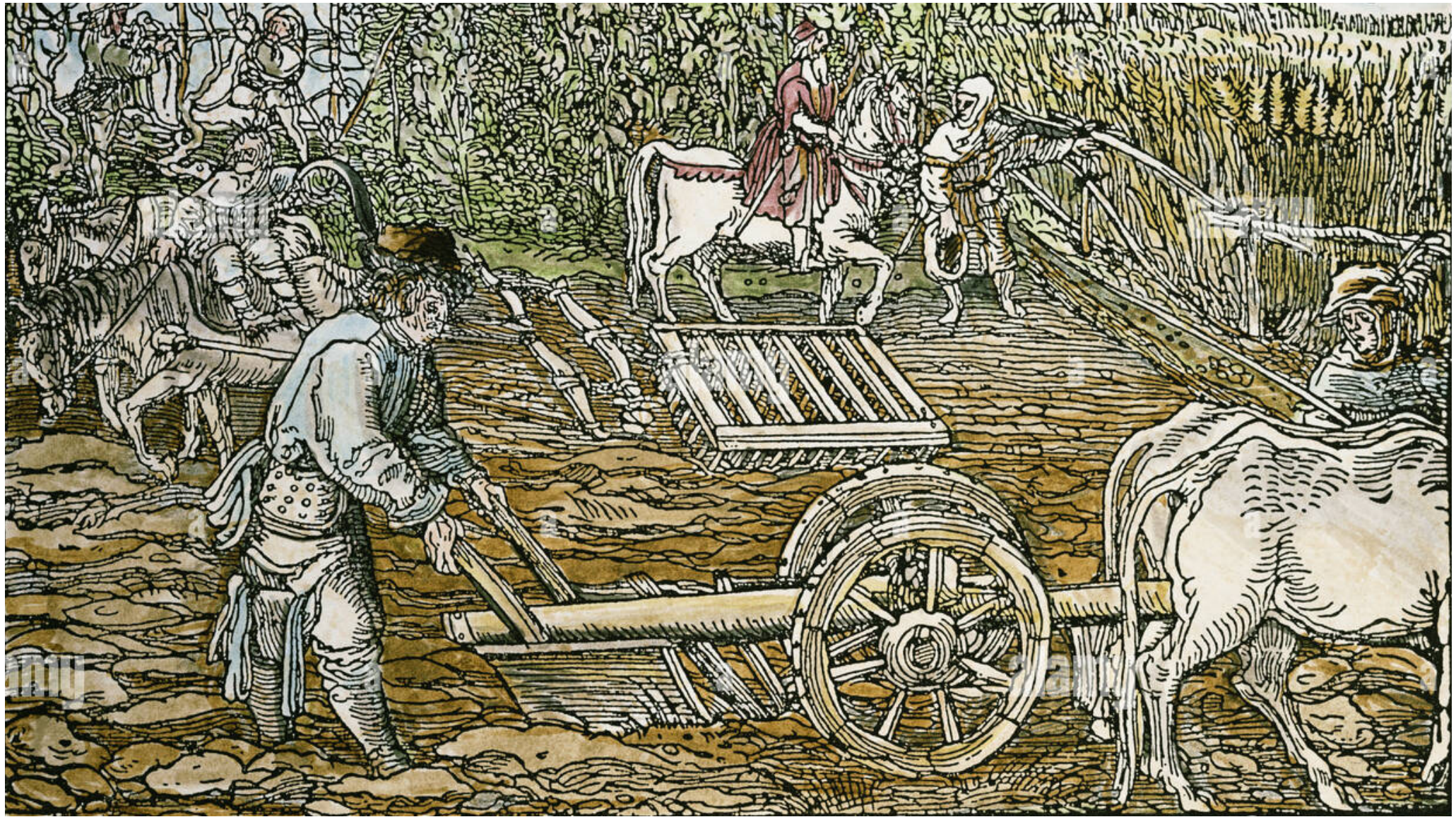






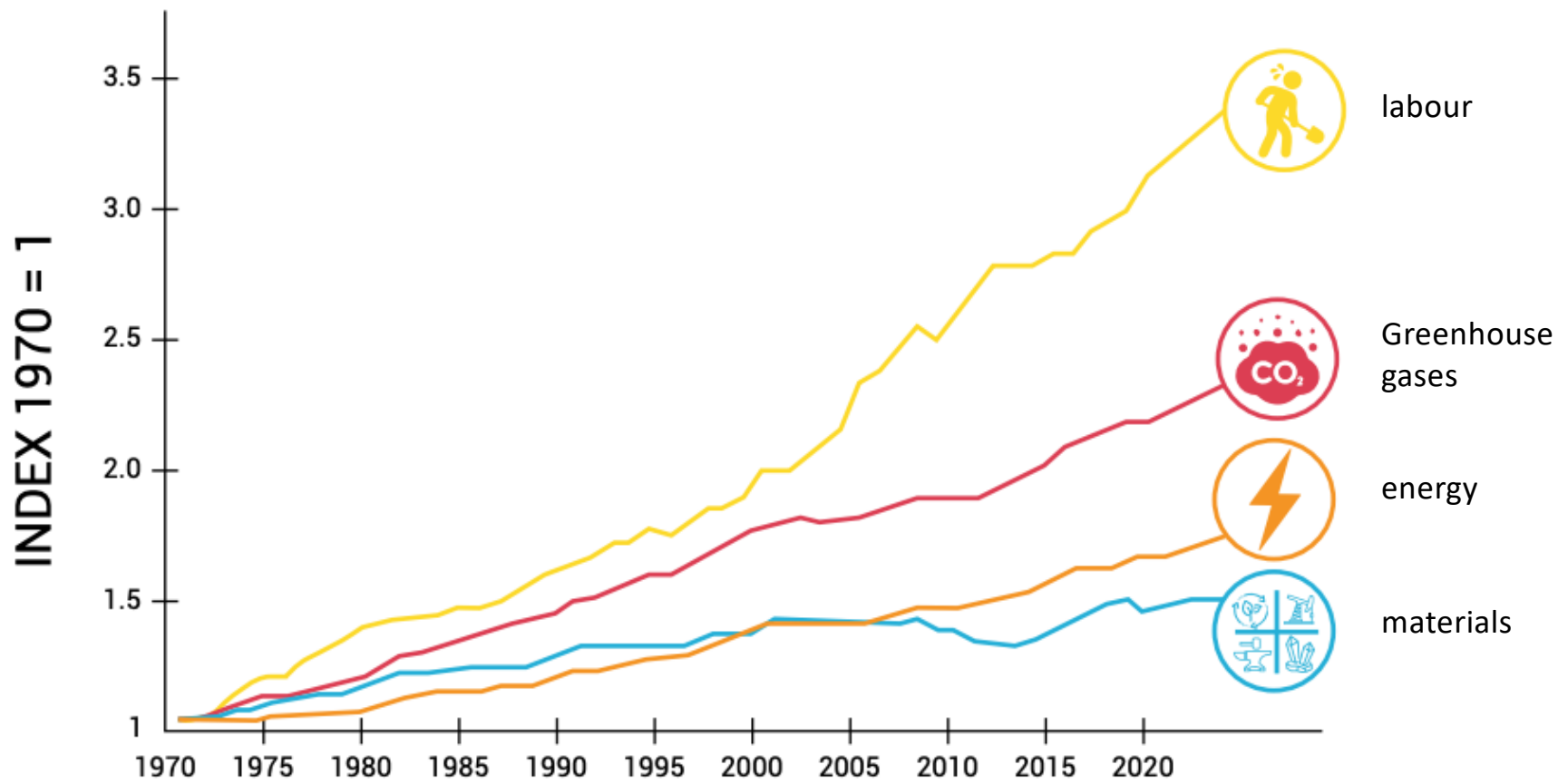




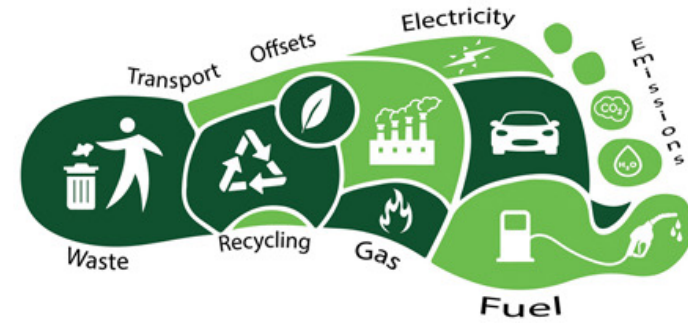
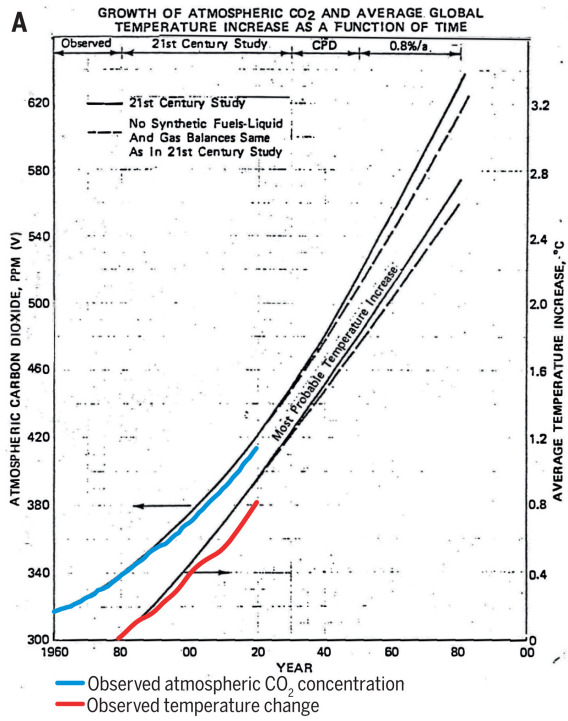












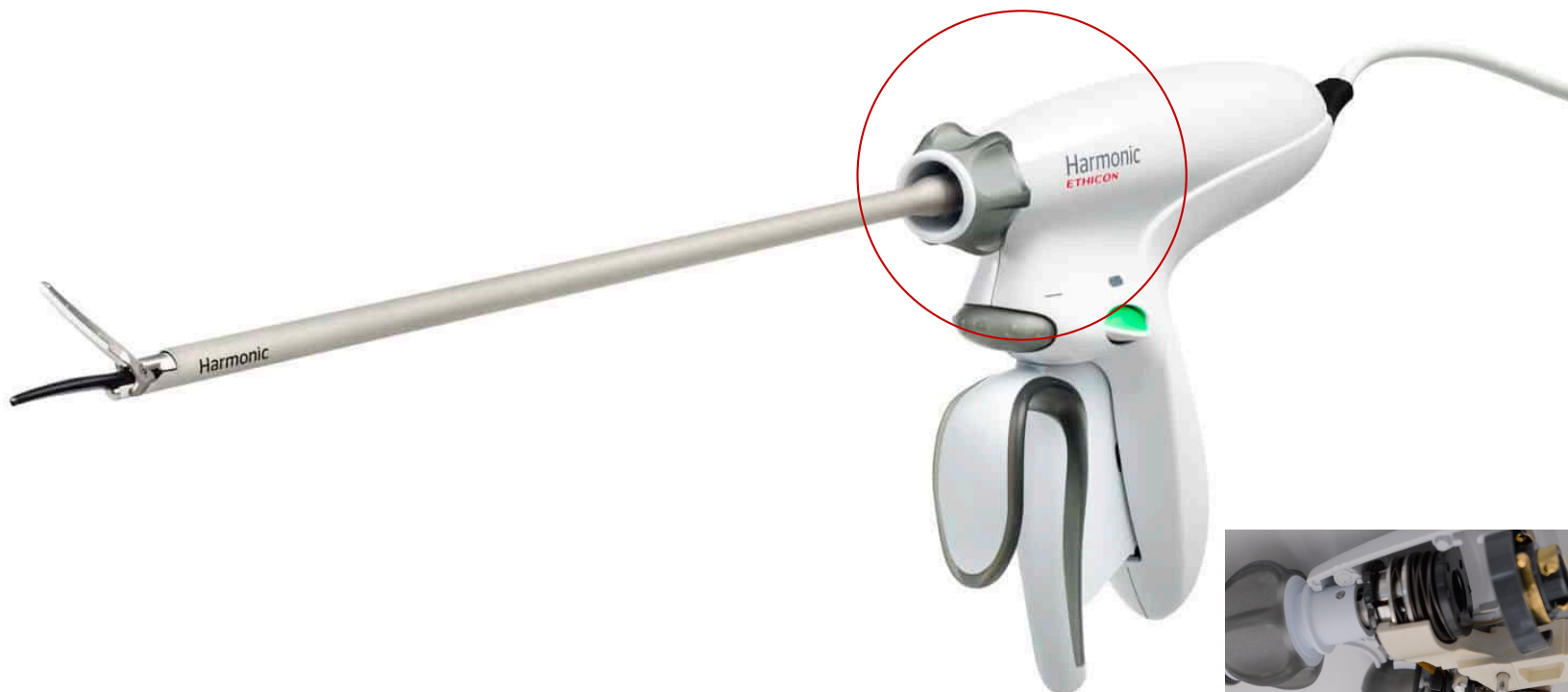
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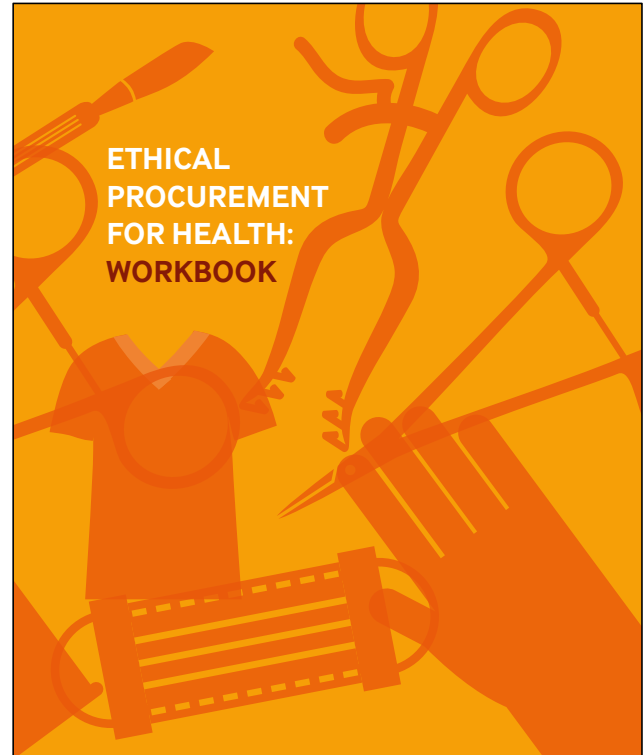


How to produce a Green Plan: A three-year strategy towards net zero



www.england.nhs.uk/greenernhs

Updated guidance - June 2021



ETHICAL PROCUREMENT FOR HEALTH: WORKBOOK



Total CO2e emission (ton)

Reduce CO2e emissions by 40 percent by the end of 2023 (compared to 2019)

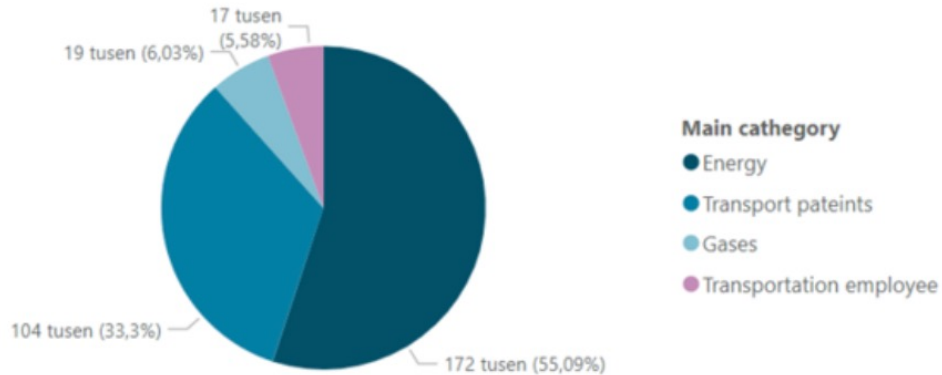
Region

Alle

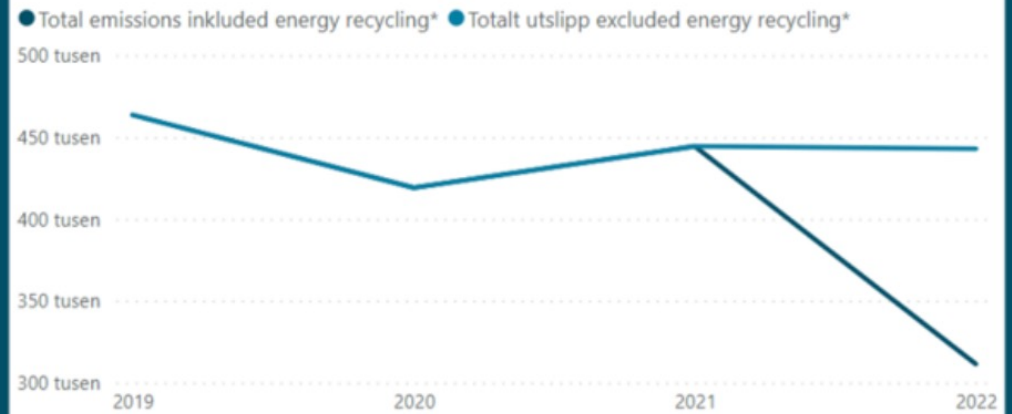
Hospital

Alle

Emissions (CO2e) per main category 2022



Total emissions (CO2e) per year



Emissions (CO2e) 2019-2022

Region	Total emissions 2019	Total emissions 2022	Change in emissions 2019-2022	Emission target 2030
Helse Sør-Øst	216 125	132 823	-39 %	129 675
Akershus universitetssykehus HF	22 737	14 359	-37 %	13 642
Oslo universitetssykehus HF	81 842	43 402	-47 %	49 105
Sunnaas sykehus HF	999	550	-45 %	600
Sykehusapotekene HF	130	80	-39 %	78
Sykehuset i Vestfold HF	14 342	8 552	-40 %	8 605
Sykehuset Innlandet HF	29 621	16 754	-43 %	17 772
Sykehuset Telemark HF	12 943	8 499	-34 %	7 766
Sykehuset Østfold HF	15 764	10 037	-36 %	9 459
Total	463 546	311 399	-33 %	278 127

Emissions (CO2e) 2019-2022 excluded energy recycling*

Region	Total emissions 2019	Total emissions 2022	Change in emissions 2019-2022	Emission target 2030
Helse Sør-Øst	216 125	200 272	-7 %	129 675
Akershus universitetssykehus HF	22 737	21 838	-4 %	13 642
Oslo universitetssykehus HF	81 842	69 717	-15 %	49 105
Sunnaas sykehus HF	999	993	-1 %	600
Sykehusapotekene HF	130	80	-39 %	78
Sykehuset i Vestfold HF	14 342	13 261	-8 %	8 605
Sykehuset Innlandet HF	29 621	25 203	-15 %	17 772
Sykehuset Telemark HF	12 943	12 654	-2 %	7 766
Sykehuset Østfold HF	15 764	14 469	-8 %	9 459
Total	463 546	442 863	-4 %	278 127

*This is energy that would normally be lost if not for the energy recovery facilities used by individual companies

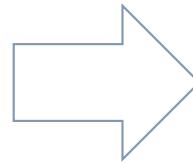
POLICY BRIEF

**Reducing the
environmental
impact of medical
devices adopted
for use in the NHS**

APRIL 2024

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medical school

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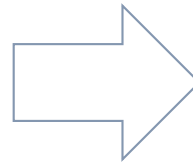


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July 2021





Intercollegiate Green Theatre Checklist Compendium of Evidence

Below are a list of recommendations to reduce the environmental impact of operating theatres. All the relevant guidance and published evidence has been included in the Compendium of evidence, accessed via the QR code:

Anaesthesia

- 1 Consider local/regional anaesthesia where appropriate (with targeted O₂ delivery only if necessary)
- 2 Use TIVA whenever possible with high fresh gas flows (5-6 L) and, if appropriate, a low O₂ concentration
- 3 Limit Nitrous Oxide (N₂O) to specific cases only and if using:
 - ▶ check N₂O pipes for leaks or consider decommissioning the manifold and switching to cylinders at point of use;
 - ▶ introduce N₂O crackers for patient-controlled delivery.
- 4 If using inhalational anaesthesia:
 - ▶ use lowest global warming potential (sevoflurane better than isoflurane better than desflurane);
 - ▶ consider removing desflurane from formulary;
 - ▶ use low-flow target controlled anaesthetic machines;
 - ▶ consider Volatile Capture Technology.
- 5 Switch to reusable equipment (e.g. laryngoscopes, underbody heaters, slide sheets, trays)
- 6 Minimise drug waste ("Don't open it unless you need it", pre-empt propofol use)

Preparing for Surgery

- 7 Switch to reusable textiles, including theatre hats, sterile gowns, patient drapes, and trolley covers
- 8 Reduce water and energy consumption:
 - ▶ rub don't scrub: after first water scrub of day, you can use alcohol rub for subsequent cases;
 - ▶ install automatic or pedal-controlled water taps.
- 9 Avoid clinically unnecessary interventions (e.g. antibiotics, catheterisation, histological examinations)

Intraoperative Equipment

- 10 REVIEW & RATIONALISE:
 - ▶ surgeon preference lists for each operation - separate essential vs. optional items to have ready on side;
 - ▶ single-use surgical packs - what can be reusable and added to instrument sets? what is surplus? (request suppliers remove these);
 - ▶ instrument sets - open only what and when needed, integrate supplementary items into sets, and consolidate sets only if it allows smaller/fewer sets (please see guidance).
- 11 REDUCE: avoid all unnecessary equipment (eg swabs, single-use gloves), "Don't open it unless you need it"
- 12 REUSE: opt for reusables, hybrid, or remanufactured equipment instead of single-use (e.g. diathermy, gallpots, kidney-dishes, light handles, quivers, staplers, energy devices)
- 13 REPLACE: switch to low carbon alternatives (e.g. skin sutures vs. clips, loose prep in gallpots)

After the Operation

- 14 RECYCLE or use lowest carbon appropriate waste streams as appropriate:
 - ▶ use domestic or recycling waste streams for all packaging;
 - ▶ use non-infectious offensive waste (yellow/black tinner), unless clear risk of infection;
 - ▶ ensure only appropriate contents in sharps bins (sharps/drugs);
 - ▶ arrange metals/battery collection where possible.
- 15 REPAIR: ensure damaged reusable equipment is repaired, encourage active maintenance
- 16 POWER OFF: lights, computers, ventilation, AGSS, temperature control when theatre empty

DISCLAIMER: These suggestions are based upon current evidence and broadly generalisable, however, specific environmental impacts will depend upon local infrastructure and individual Trusts' Implementation strategies.

Intercollegiate Green Theatre Scorecard, November 2022

Environmental sustainability guidance: Outpatient ENT metal instruments

Version 1: November 2024

Environmental sustainability guidance: Wax microsuction

Version 1: November 2024

- We recommend the sucker and liners are changed daily
- Rarely, tubing may need to be contaminated with blood or
- There is no indication to use

The importance of environmentally just the UK General Medical Council advising to, provided these don't compromise care standards".

It is estimated that around 2.3 million related to earwax². In England, around annually³.

In recent years, there have been creating a trend towards single use me the UK showed that 79% of ENT UK meet the end of the day, but others change m use gloves and masks routinely in wax r

Risk of infection from wax
Wax (cerumen) is a normal biological a healthy skin (commensal bacteria). O Corynebacterium spp., Staphylococcus al Therefore, coming into contact with he skin (for example through a handshake)

Risk of backflow in low-volume suction

- The pressure in the tube is higher created by the lip around the suct
- The position of the suction tube is gravity may pull the contents in th is positioned higher than the pat sufficient to prevent backflow to t
- There is concurrent use of high-v

Environmental sustainability guidance: Flexible nasoendoscopy

Version 1: November 2024

- We recommend only using reusable flexible nasoendoscopes
- We do not recommend routine use of local anaesthetic spray
- We do not recommend routine use of anti-fog
- We do not recommend routine use of lubricant gels
- Nasoendoscopy can be safely performed without gels
- Ultraviolet-C light is the preferred method for decontamination of flexible nasoendoscopes

The importance of environmentally sustainable practice in healthcare is increasingly recognised, with the UK General Medical Council advising doctors to "Choose sustainable solutions when you're able to, provided these don't compromise care standards"¹.

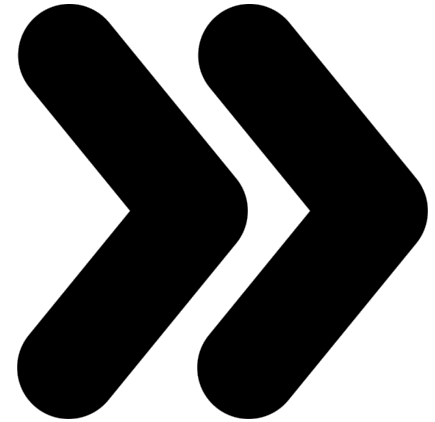
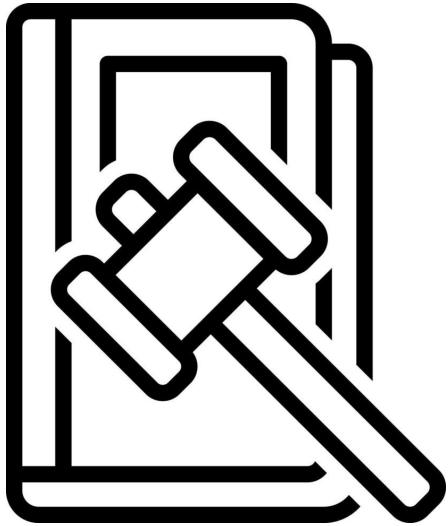
Flexible nasoendoscopy is a frequently used diagnostic tool in outpatient and emergency settings, with the average ENT consultant performing 700-2000 nasoendoscopies per year². Nasoendoscopy has potential to generate waste from use of disposable devices, personal protective equipment, supplementary items and from the decontamination process. In a survey at the 2024 ENT UK Spring Meeting, 36% of ENT UK members stated they use single-use nasoendoscopes as part of their practice.

Here we review evidence and provide recommendations on safety and environmental impact of practice (focused on carbon dioxide emissions and waste generation).

Reusable versus single-use flexible nasendoscopes

Compared to single use, reusable nasendoscopes are more environmentally friendly and cost effective in the long term^{3,4}. A study of cystoscopes (of similar size and composition to nasendoscopes) found that manufacture of a single use scope generates 1.37kg of CO₂, whilst for a reusable scope this is 6.55kg of CO₂. The use of an Endoscope Washer/Disinfector for decontamination generates at least 0.18 kg of CO₂ per cycle⁵. Assuming similar packaging and transport, and using these figures, a reusable nasendoscope outperforms single use nasendoscopes for carbon footprint after 6 uses. Single use nasendoscopes are typically disposed of in clinical waste, and if incinerated would result in further CO₂ generation of 1.1kg per 1kg of waste⁶.

On the basis of a typical ENT consultant performing 700-2000 endoscope procedures per year, the estimated overall CO₂ reduction for an ENT surgeon from using reusable rather than single use nasendoscopes is 1080-1570kg of CO₂ (manufacture and disposal combined).





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