



InterClean  
**Healthcare  
Cleaning  
Forum**

# Sustainability at the heart of cleaning

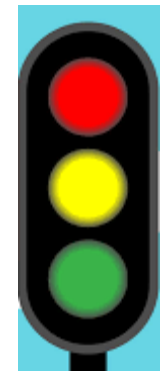
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Registered nurse

Head of Clinical Products Management  
Black Country Alliance, UK.



# Can cleaner also be greener?



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**RN, MSc**  
**Head of Clinical Products**



**Black Country Alliance Procurement Team**















[\(30\) Sweatshops & hospitals -- how health purchasing is damaging global health | Mahmood Bhutta | TEDxUCL - YouTube](#)



# SUSTAINABLE DEVELOPMENT GOALS

United Nations (2020)





# One planet, one ocean, only one finite resource

## Endangered Elements

Endangered Elements

|                   |                   |                   |                    |                    |                    |                    |                    |                    |                    |                    |                    |                     |                    |                     |                    |                    |                   |
|-------------------|-------------------|-------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|---------------------|--------------------|---------------------|--------------------|--------------------|-------------------|
| 1<br>H<br>1.008   |                   |                   |                    |                    |                    |                    |                    |                    |                    |                    |                    |                     |                    |                     |                    |                    | 2<br>He<br>4.003  |
| 3<br>Li<br>6.941  | 4<br>Be<br>9.012  |                   |                    |                    |                    |                    |                    |                    |                    |                    |                    | 5<br>B<br>10.81     | 6<br>C<br>12.01    | 7<br>N<br>14.01     | 8<br>O<br>16       | 9<br>F<br>19       | 10<br>Ne<br>20.18 |
| 11<br>Na<br>22.99 | 12<br>Mg<br>24.31 |                   |                    |                    |                    |                    |                    |                    |                    |                    |                    | 13<br>Al<br>26.98   | 14<br>Si<br>28.09  | 15<br>P<br>30.97    | 16<br>S<br>32.07   | 17<br>Cl<br>35.45  | 18<br>Ar<br>39.95 |
| 19<br>K<br>39.10  | 20<br>Ca<br>40.08 | 21<br>Sc<br>44.96 | 22<br>Ti<br>47.88  | 23<br>V<br>50.94   | 24<br>Cr<br>52     | 25<br>Mn<br>54.94  | 26<br>Fe<br>55.85  | 27<br>Co<br>58.93  | 28<br>Ni<br>58.69  | 29<br>Cu<br>63.55  | 30<br>Zn<br>65.39  | 31<br>Ga<br>69.72   | 32<br>Ge<br>72.59  | 33<br>As<br>74.92   | 34<br>Se<br>78.96  | 35<br>Br<br>79.9   | 36<br>Kr<br>83.8  |
| 37<br>Rb<br>85.47 | 38<br>Sr<br>87.62 | 39<br>Y<br>88.91  | 40<br>Zr<br>91.22  | 41<br>Nb<br>92.91  | 42<br>Mo<br>95.94  | 43<br>Tc<br>(98)   | 44<br>Ru<br>101.1  | 45<br>Rh<br>102.9  | 46<br>Pd<br>106.4  | 47<br>Ag<br>107.9  | 48<br>Cd<br>112.4  | 49<br>In<br>114.8   | 50<br>Sn<br>118.7  | 51<br>Sb<br>121.8   | 52<br>Te<br>127.6  | 53<br>I<br>126.9   | 54<br>Xe<br>131.3 |
| 55<br>Cs<br>132.9 | 56<br>Ba<br>137.3 | 57<br>La<br>138.9 | 72<br>Hf<br>178.5  | 73<br>Ta<br>180.9  | 74<br>W<br>183.9   | 75<br>Re<br>186.2  | 76<br>Os<br>190.2  | 77<br>Ir<br>192.2  | 78<br>Pt<br>195.1  | 79<br>Au<br>197    | 80<br>Hg<br>200.5  | 81<br>Tl<br>204.4   | 82<br>Pb<br>207.2  | 83<br>Bi<br>209     | 84<br>Po<br>(210)  | 85<br>At<br>(210)  | 86<br>Rn<br>(222) |
| 87<br>Fr<br>(223) | 88<br>Ra<br>(226) | 89<br>Ac<br>(227) | 104<br>Rf<br>(257) | 105<br>Db<br>(260) | 106<br>Sg<br>(263) | 107<br>Bh<br>(262) | 108<br>Hs<br>(265) | 109<br>Mt<br>(266) | 110<br>Ds<br>(271) | 111<br>Rg<br>(272) | 112<br>Cn<br>(285) | 113<br>Uut<br>(284) | 114<br>Fl<br>(289) | 115<br>Uup<br>(288) | 116<br>Lv<br>(292) | 117<br>Uus<br>0    | 118<br>Uuo<br>0   |
|                   |                   |                   | 58<br>Ce<br>140.1  | 59<br>Pr<br>140.9  | 60<br>Nd<br>144.2  | 61<br>Pm<br>(147)  | 62<br>Sm<br>150.4  | 63<br>Eu<br>152    | 64<br>Gd<br>157.3  | 65<br>Tb<br>158.9  | 66<br>Dy<br>162.5  | 67<br>Ho<br>164.9   | 68<br>Er<br>167.3  | 69<br>Tm<br>168.9   | 70<br>Yb<br>173    | 71<br>Lu<br>175    |                   |
|                   |                   |                   | 90<br>Th<br>232    | 91<br>Pa<br>(231)  | 92<br>U<br>(238)   | 93<br>Np<br>(237)  | 94<br>Pu<br>(242)  | 95<br>Am<br>(243)  | 96<br>Cm<br>(247)  | 97<br>Bk<br>(247)  | 98<br>Cf<br>(249)  | 99<br>Es<br>(254)   | 100<br>Fm<br>(253) | 101<br>Md<br>(256)  | 102<br>No<br>(254) | 103<br>Lr<br>(257) |                   |



SERIOUS THREAT IN  
THE NEXT 100 YEARS

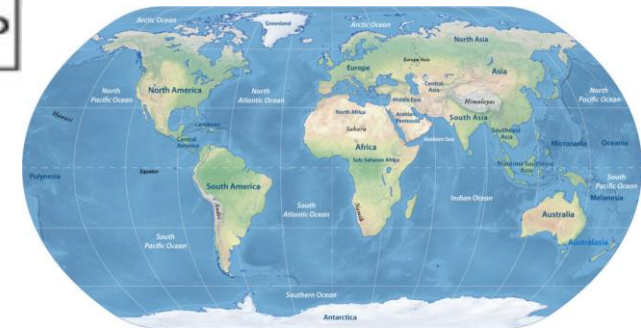


RISING THREAT FROM  
INCREASED USE



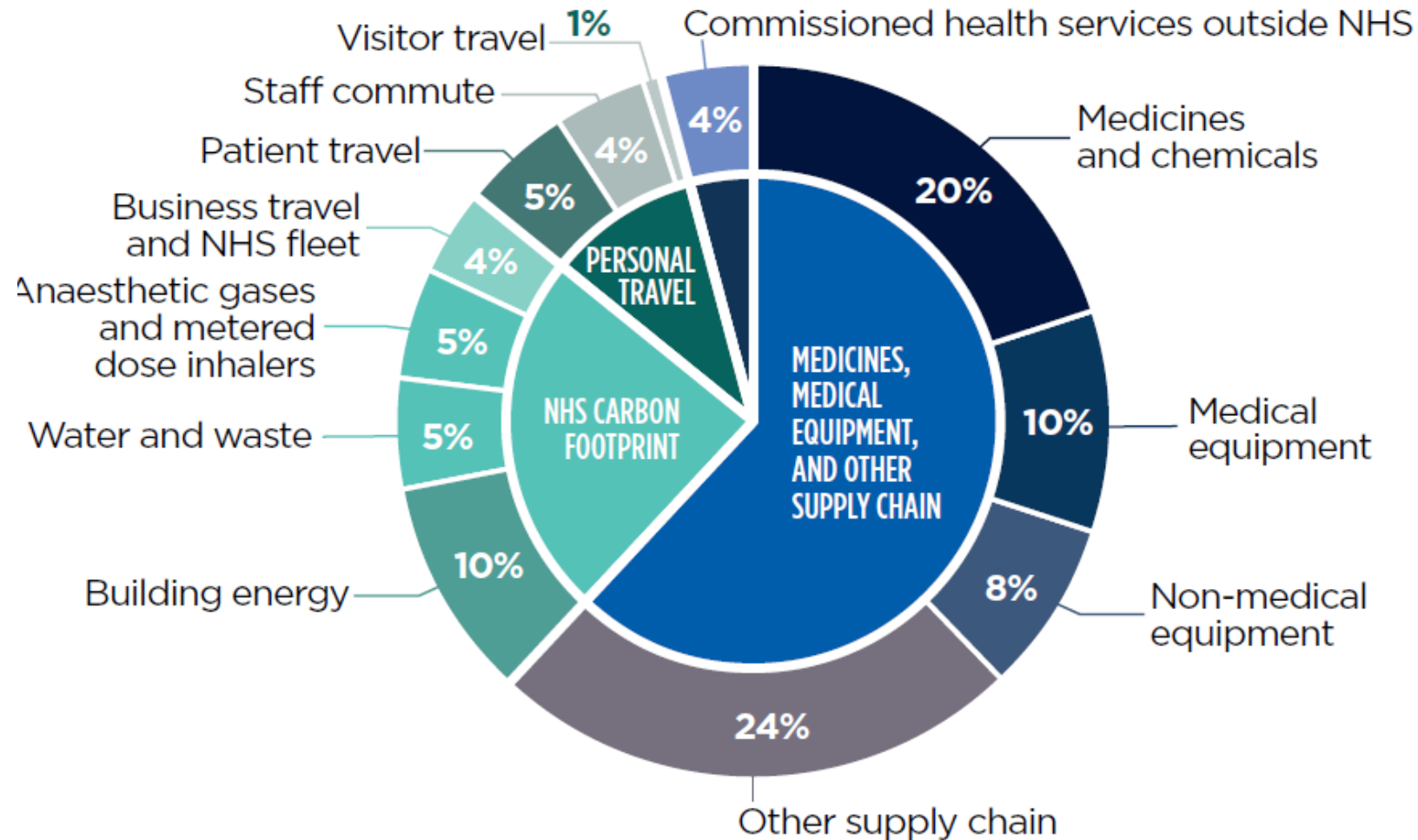
LIMITED AVAILABILITY,  
FUTURE RISK TO SUPPLY

40% of the 118 elements that make up everything on earth are facing serious threat



Chattopadhyay (2017)

# The English NHS Carbon Footprint



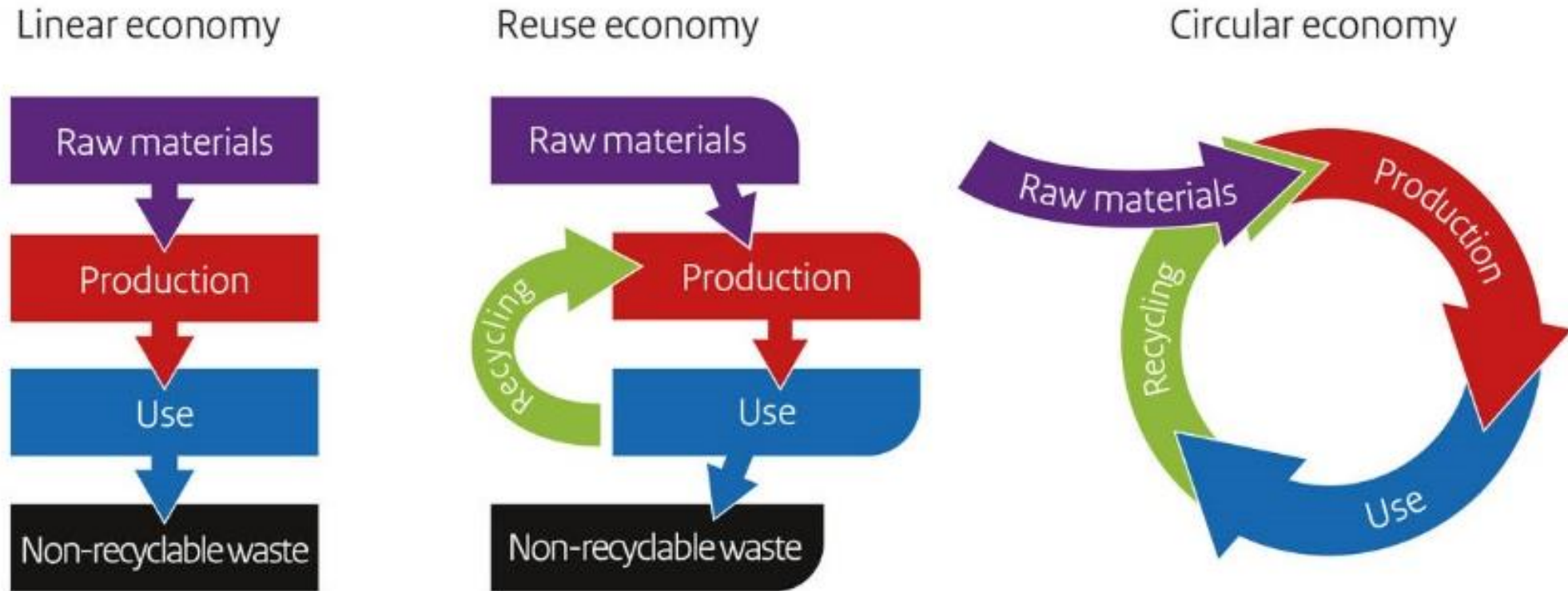




How can we reduce the environmental impact of cleaning for each of these interventions?

Rowan, Kremer and McDonnell (2023)

# The move towards reuse makes greener cleaning more important than ever:

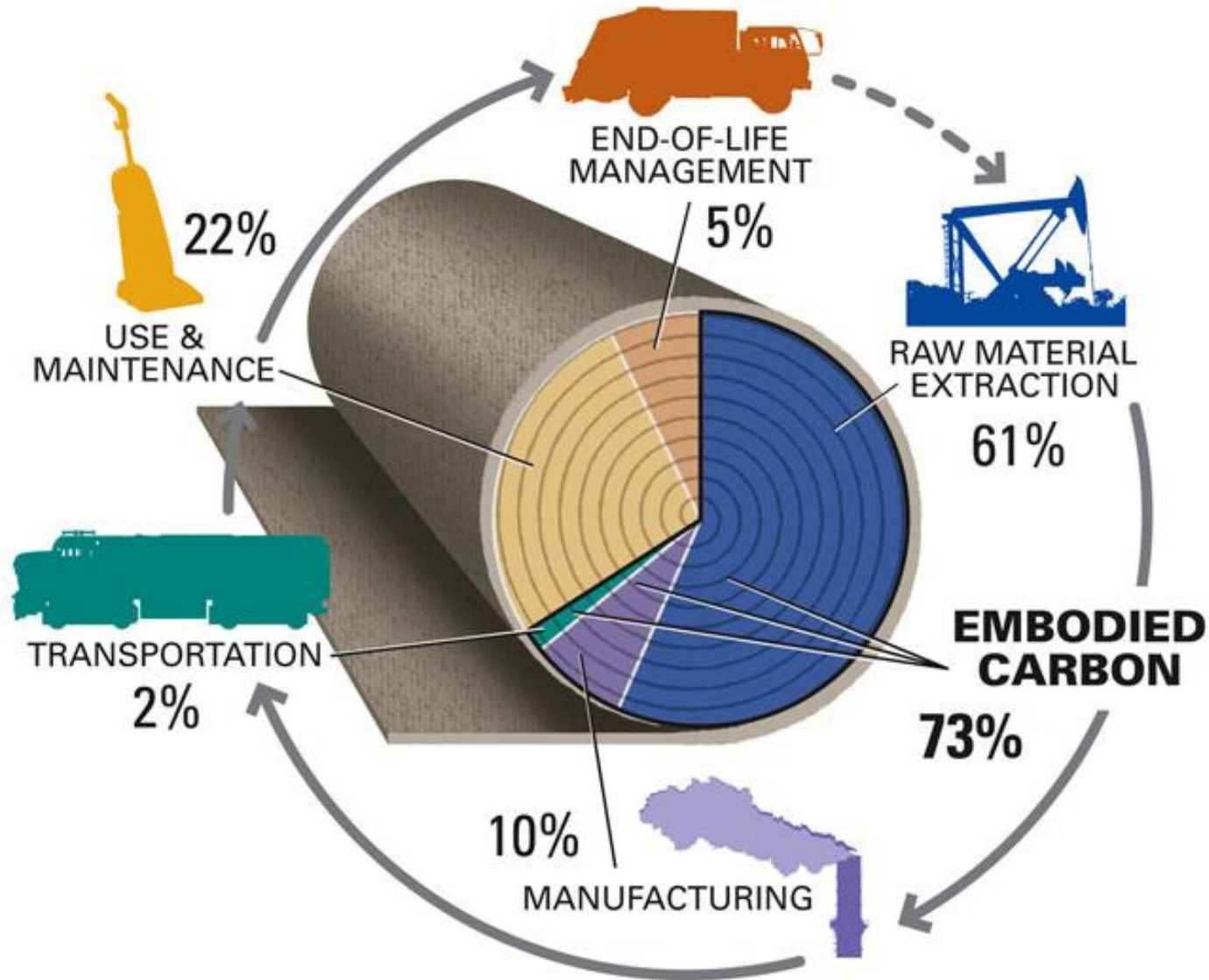


Drew et al. (2022) *HealthcareLCA: an open-access living database of health-care environmental impact assessments*. Lancet Planet Health, 6: pp1000–12

Keil et al. (2022) *The impact of switching from single-use to reusable healthcare products: a transparency checklist and systematic review of life-cycle assessments*. Available at: <https://doi.org/10.1093/eurpub/ckac174>



# Understand the lifecycle to spot the greenwash



# What can we learn from Industry?

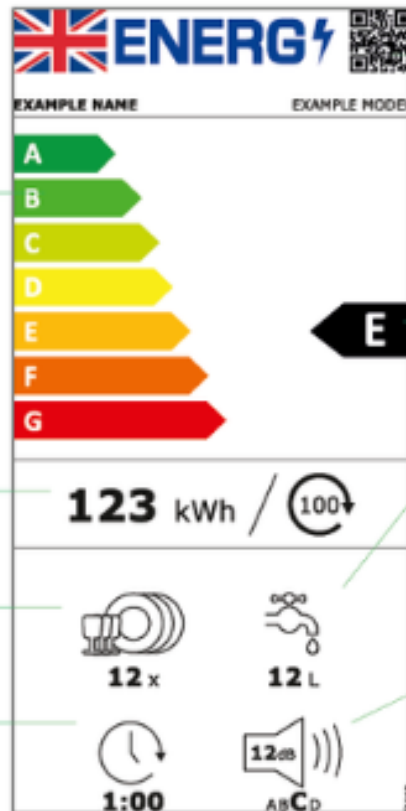
## New label for dishwashers

Energy efficiency scale  
A to G

Energy consumption  
of Eco-programme  
per 100 cycles (kWh)

Rated capacity  
with standard place settings  
for the Eco-programme

Duration of the  
Eco-programme  
(hours and minutes)



QR code

Energy efficiency class  
of product

Water consumption  
per cycle in Eco-programme  
(litres)

Airborne acoustical  
noise emissions  
(dB(A)) and noise  
emission class

## Nutrition Facts

8 servings per container

**Serving size** 2/3 cup (55g)

**Amount per serving**

**Calories** 230

**% Daily Value\***

**Total Fat** 8g 10%

Saturated Fat 1g 5%

Trans Fat 0g

**Cholesterol** 0mg 0%

**Sodium** 160mg 7%

**Total Carbohydrate** 37g 13%

Dietary Fiber 4g 14%

Total Sugars 12g

Includes 10g Added Sugars 20%

**Protein** 3g

Vitamin D 2mcg 10%

Calcium 260mg 20%

Iron 8mg 45%

Potassium 235mg 6%

\*The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.









# Decision Support Tool To Compare Sustainability of Clinical Products (CN Version 3.0 2023)

Enter Product A here.....  
Enter Product B here.....

Is this product a red, amber or green risk to a sustainable planet when compared with another? (No data = 0)

0 for red  
1 for amber  
2 for green

|                                |   |  |   |   |  |   |  |   |
|--------------------------------|---|--|---|---|--|---|--|---|
| Energy                         | Increase in energy use                                      | Similar energy use                                   | Reduction in energy use                     | Runs off battery                        | Runs off mains                                       | Requires intensive heat for production                          | Made using renewable energy  |   |
| Water                          | Increase in water use                                       | Similar water use                                    | Reduction in water use                      | Increase in foul sewerage               | Reduction in foul sewerage                           | Increase in use of toxic chemicals/ drugs                       | Reduction in use of toxic chemicals/ drugs                               |   |
| Waste                          | Increase in overall packaging and or product waste (weight) | Increase in clinical waste (weight and or type)      | Similar waste (type and or weight)          | Reduction in waste (type and or weight) | Packaging is recyclable                              | Packaging reusable, or no packaging needed                      | Moving from virgin material to recycled or less environmentally damaging | Consider weighing current product and alternative product to evaluate waste and material content. Multiply difference by number of products used. Ask procurement for help on usage |
| Transport emissions            | Item manufactured outside of Europe                         | Item manufactured in Europe                          | Item manufactured in UK                     | Air freighted                           | Shipped  | Shipped using green fuel  | Transported in green fleet   | Sales teams national<br>Sales teams regional  |
| Whole life costs               | Product is single use                                       | Product is reusable, decontaminated off-site         | Product is reusable, decontaminated on-site | Product requires extra consumables      | Expected product lifecycle less than 1 year          | Expected product lifecycle is 1-5 years                         | Expected product lifecycle is more than 5 years                          | Training materials virtual or electronic<br>Supplier has shared net zero plan   |
| Models of care<br>Social value | Product leads to a reduction in health inequalities         | Item manufactured locally/ local business (Midlands) | Product improves patient outcomes           | Product reduces length of stay          | Supplier has shared their social value and EDI plans | Product leads to increase in local jobs/ training opportunities | Product co-designed with end user  | Value Based Procurement Product leads to greener overall care   |

|  |                      |
|--|----------------------|
| Product A  | Product B            |
|  <input type="text"/>   | <input type="text"/> |
|  <input type="text"/>   | <input type="text"/> |
|  <input type="text"/>   | <input type="text"/> |
|  <input type="text"/>   | <input type="text"/> |
|  <input type="text"/> | <input type="text"/> |
|  <input type="text"/> | <input type="text"/> |

Score for each category

# Is this product a red, amber or green risk to a sustainable planet? (If unsure score as red -

|        |   |   |                                    |   |                            |  |  |
|--------|---|---|------------------------------------|---|----------------------------|--|--|
| Energy | Increase in energy use                                      | Similar energy use                              | Reduction in energy use            | Runs off battery                        | Runs off mains             | Requires intensive heat for production     | Made using renewable energy                |
| Water  | Increase in water use                                       | Similar water use                               | Reduction in water use             | Increase in foul sewerage               | Reduction in foul sewerage | Increase in use of toxic chemicals/ drugs  | Reduction in use of toxic chemicals/ drugs |
| Waste  | Increase in overall packaging and or product waste (weight) | Increase in clinical waste (weight and or type) | Similar waste (type and or weight) | Reduction in waste (type and or weight) | Packaging is recyclable    | Packaging reusable, or no packaging needed |  |



# Detergent wipe vs microfibre cloth and hypochlorous acid

\*GAMA (2024), ^ Gessi et al, 2023)

## Products

Detergent wipe  
and plastic  
packaging

0 = Red  
1 = Orange  
2 = Green

Reusable cloth  
and  
hypochlorous  
acid (HOCl)

## Water

Significant water  
use during  
manufacturing.  
Discharge of  
chemicals -  
\*Harmful to aquatic  
life with long  
lasting affects

Washing cloths  
Tap water  
needed to  
generate the  
HOCl  
^Non-toxic to  
aquatic life

## Waste

Incinerate in  
clinical waste.  
Made with and  
contained in  
plastic  
Each wipe is 2g  
when dry,  
increase in waste

Reused and  
washed  
Bottles can be  
refilled

## Transport

Shipped from  
China

Cloth made in  
EU, HCOI  
made on  
hospital site

## Whole life costs

Single use  
plastic wipes  
and  
packaging

Reusable cloth  
and packaging,  
decontaminate  
on site

## Score

1

7

|                                |                                     |  |   |                                    |  |   |   |   |
|--------------------------------|-------------------------------------|--|---|------------------------------------|--|---|---|---|
| Transport emissions            | Item manufactured outside of Europe | Item manufactured in Europe                          | Item manufactured in UK                     | Air freighted                      | Shipped  | Supplier has shared net zero plan                               | Sales teams national                            | Sales teams regional                                |
| Whole life costs               | Product is single use               | Product is reusable, decontaminated off-site         | Product is reusable, decontaminated on-site | Product requires extra consumables | Expected product lifecycle less than 1 year    | Expected product lifecycle is 1-5 years                         | Expected product lifecycle is more than 5 years | Training materials virtual or electronic            |
| Models of care<br>Social value | Product is made outside of Europe   | Item manufactured locally/ local business (Midlands) | Product improves patient outcomes           | Product reduces length of stay     | Supplier has shared social value and EDI plans | Product leads to increase in local jobs/ training opportunities | Product do-designed with end user               | Product leads to a reduction in health inequalities |



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## References and further reading