

COVID-19 as a catalyst for a change of healthcare “throwaway” mentality?

20/05/2021

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About HCWH Europe



We are a non-profit European network of hospitals, healthcare systems, healthcare professional bodies, local authorities, research/academic institutions, and environmental and health organisations.

Health Care Without Harm is a global movement:

- Three regional HCWH offices (Europe, USA, South East Asia) and virtual team in Latin America
- Partners around the world (Australia, China, India, South Africa)



Anna Shvets @pexels

<https://noharm-europe.org/>

First, do no harm



Vision: Healthcare mobilises its ethical, economic and political influence to create an ecologically sustainable, equitable and healthy world.

Mission: Transform healthcare so that it reduces its environmental footprint, becomes a community anchor for sustainability and a leader in the global movement for environmental health and justice.

Global Green and Healthy Hospitals



GGHH is an international network of:

- Hospitals
- Healthcare facilities
- Health systems
- Health organisations

This worldwide community comprises **1,450 members** in **72 countries**, representing the interests of over **43,000 hospitals/health centres**.



<https://www.greenhospitals.net/>

GGHH in Europe



**122 members in 22
countries**



1,064,922



3,383



124,309



75.6m

Doctors for Greener Healthcare



- Brings together doctors from across Europe to collaborate, share best practice, and advocate for a healthy future by reducing the environmental impact of healthcare
- Members enjoy access to platforms, guidance, training, tools, and resources to support them in taking action to reduce the environmental impact of the healthcare sector and become powerful environmental health advocates
- Membership is free, and open to registered doctors and medical students

<https://bit.ly/doctors-greener-healthcare>

Doctors for Greener Healthcare

Collaborate, share
best practice, and
advocate for a
healthy future.

JOIN OUR NETWORK



Link between health & environment



13.7 million deaths in 2016 due to environmental factors
12–18% of all deaths in the 53 countries of the WHO Europe Region

Preventing disease through healthy environments: a global assessment of the burden of disease from environmental risks. WHO (2016)

2.9 million deaths attributes to ambient PM_{2.5} pollution
7 million deaths to overall air pollution

The 2019 report of The Lancet Countdown on health and climate change: ensuring that the health of a child born today is not defined by a changing climate. (2019)



PREVENTING DISEASE THROUGH HEALTHY ENVIRONMENTS

A global assessment of the burden of disease from environmental risks

A Prüss-Ustün, J Wolf, C Corvalán, R Bos and M Neira



BodyBurden

The Pollution in Newborns

A benchmark investigation of industrial chemicals, pollutants, and pesticides in human umbilical cord blood

Nearly 300 chemicals found in the cord blood of 10 US babies – contamination in the womb.

JANE HOULIHAN
TIMOTHY KROPP, PH.D.
RICHARD WILES
SEAN GRAY
CHRIS CAMPBELL



JULY 14, 2005

Children are being born pre-polluted



German human biomonitoring survey:

- Plastic byproducts were found in 97% of blood and urine samples from 2,500 children tested between 2014 and 2017
- Per- and poly-fluorinated alkyl substances (PFAS) in the blood of children and adolescents (2020)



BPA
DETECTED
IN 93%
OF
PEOPLE
TESTED



Exposure to harmful chemicals in healthcare

MEDICAL TEXTILES

Phthalates (plasticizers)

Polybrominated Biphenyl Ethers (flame retardants)

CLEANING PRODUCTS

Glycol Ethers (surfactant)

Cyclosiloxanes (spreading agent)

Ethanolamines (emulsifier)

FLOORING

PVC



INTRAVENOUS TUBING & BAGS

Phthalates (plasticizers)

MEDICAL DEVICES

Phthalates, BPA (plasticisers)

MEDICAL GLOVES

Phthalates (plasticisers)



Exposure to harmful chemicals in healthcare

- Exchange transfusion of blood in neonates
- Extracorporeal membrane oxygenation (ECMO) treatment of neonates and of adults
- Total Parenteral Nutrition (TPN) in neonates
- Multiple procedures in sick neonates
- Haemodialysis
- Enteral nutrition in neonates and adults
- Heart transplantation or coronary artery bypass graft surgery
- Massive blood transfusion of red blood cells and plasma
- Peritoneal dialysis



Premature neonates in neonatal intensive care units, infants subjected to repeated medical treatment using medical devices, and dialysis patients **are at risk of DEHP- and BPA-induced effects**

Scientific Committee on Emerging and Newly-Identified Health Risks (2015)

1st
Cancers
254 600

2nd
Ischaemic heart disease
134 200

3rd
80 700

Chronic obstructive pulmonary disease

4th
Stroke
46 400

5th

Mental, behavioural and neurological conditions, including Alzheimer's and Parkinson's disease
28 600

10th
Asthma
3 700

9th
Hypertensive heart disease
4 200

8th
Other circulatory diseases and cardiovascular diseases
4 300

7th
Chronic kidney diseases
7 000

6th
Diabetes melitus
26 700

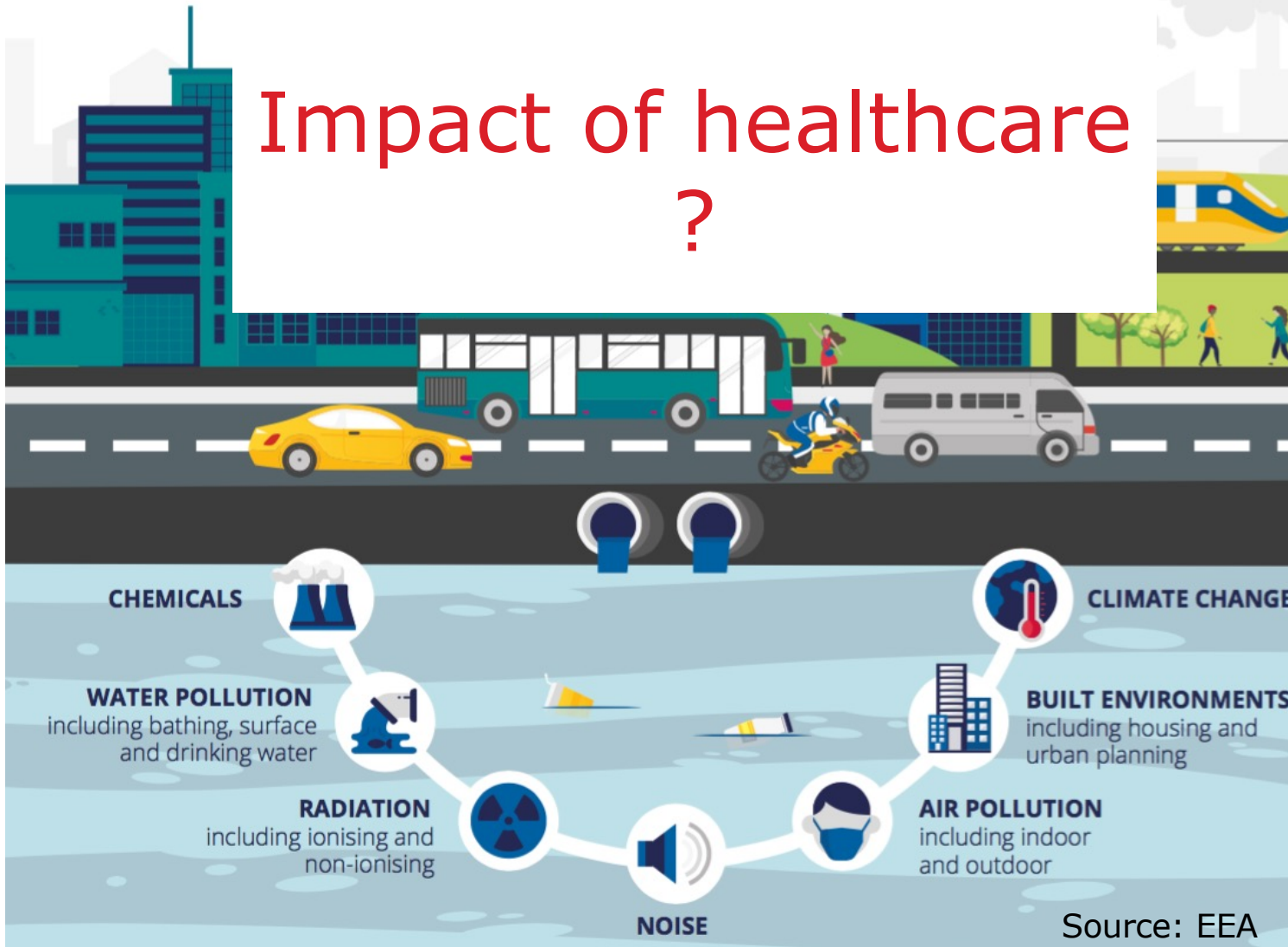
Top 10 non-communicable diseases causing deaths attributable to the environment in the high income European countries, 2012



Source: EEA

Environmental stressors

Impact of healthcare ?



The Harm We Do

Climate footprint of healthcare

HEALTH CARE'S CLIMATE FOOTPRINT

HOW THE HEALTH SECTOR CONTRIBUTES TO THE GLOBAL CLIMATE CRISIS AND OPPORTUNITIES FOR ACTION



- Health care's climate footprint is equivalent to 4.4% of global net emissions
- If the health sector were a country, it would be the fifth-largest emitter on the planet
- The lion's share of emissions — 71% are primarily derived from the health care supply chain

Environmental footprint of healthcare



Between 1% and 5% of total global environmental impacts
More than 5% for some national impacts.

The health and social care services in England generate 5% of all road traffic, producing air pollution, greenhouse gases, and noise.

[Lancet Planet Health 2020; 4: e271–79](#)

Between 2009 to 2015, Canadian healthcare activities generated 33 million tonnes of greenhouse gas emissions and over 200,000 tonnes of other pollutant emissions (ammonia, carbon monoxide, methanol, nitrogen oxides, non-methane volatile organic compounds, PM, and sulfur dioxide)

[PLoS Med 2018; 15\(7\): e1002623](#)

The rise of “throw-away” medical supplies



Austrian National Library @unsplash

Operation room, around 1943



National-Cancer-Institute @unsplash

Operation room, around 2020

The rise of “throw-away” medical supplies



Single use pack from
one cataract
procedure

Source: Centre for
Sustainable Healthcare)



CSH Chair
@SusHealth_Chair

Disposable hospital supplies are trashing the environment



Linear healthcare economy:

take>make>use>dispose culture

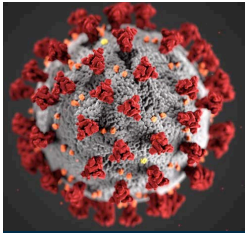
- ◆ Around 30%: single-use plastics which regularly contain harmful chemicals
- ◆ A lot of packaging / over-packaging
- ◆ Low % of recycling (less than 5% of plastic healthcare waste is recycled in the UK)
- ◆ Resource consumption and pollution
- ◆ High emissions produced by manufacturing medical supplies and their disposal

Disposal:

- Landfill
- Incineration



Incineration of healthcare wastes can result in the emission of dioxins, furans, and particulate matter.



COVID-19 crisis

PPE required for frontline healthcare workers **every month**:

- 89 million masks
- 30 million gowns
- 1.6 million goggles
- 76 million gloves
- 2.9 million litres of hand sanitiser

WHO (March 2020)

PPE being produced to fight the COVID-19 pandemic is made from **plastics**, very likely to contain **hazardous chemicals**, and are **disposable and not recyclable**

Average monthly number of PPE items distributed for use by health and social care services

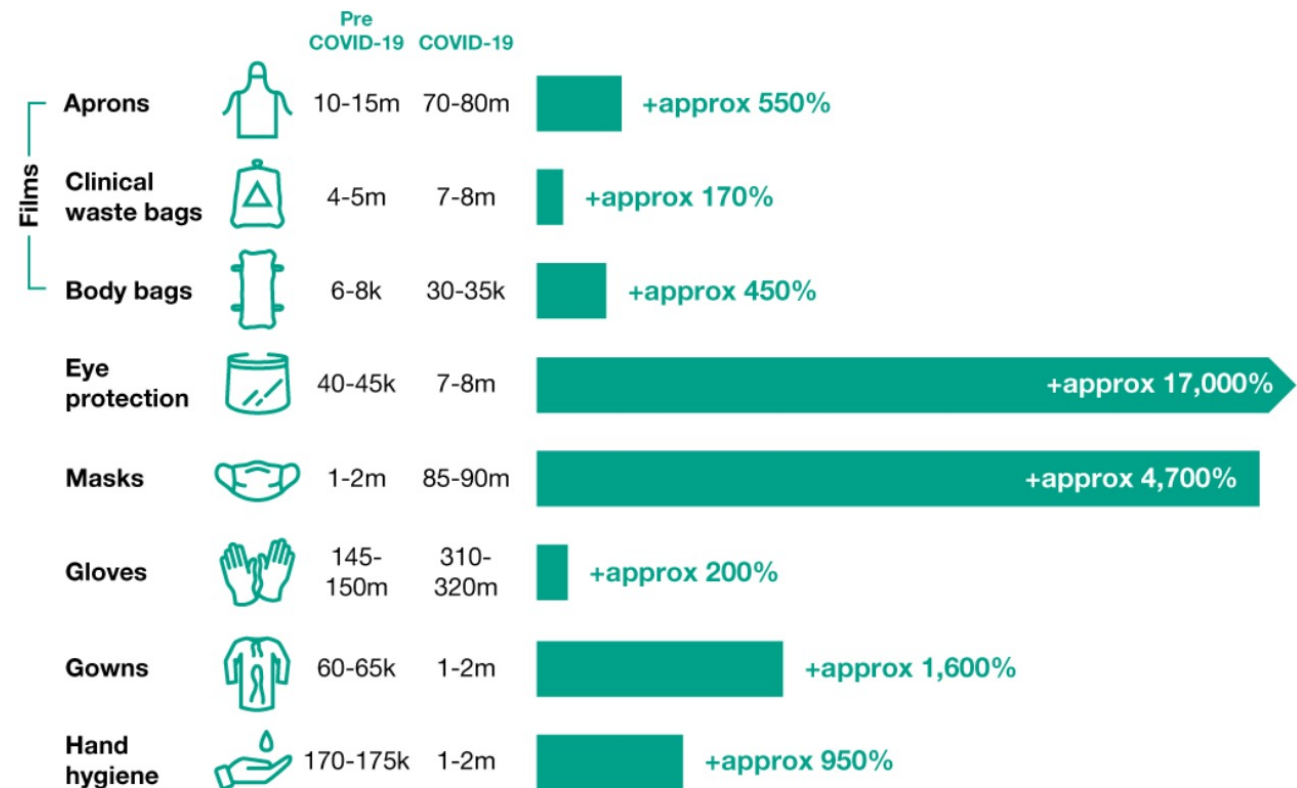
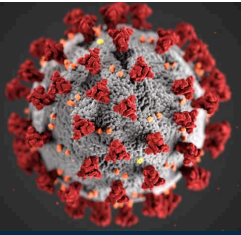


Image: UK Department of Health & Social Care (September 2020)
Personal Protective Equipment (PPE) Strategy - Stabilise and build resilience



COVID-19 crisis

The “Plastic Pandemic Emergency”

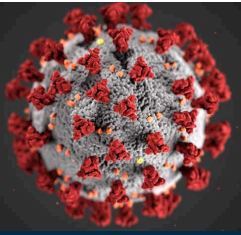
- Less recycling
- Often no segregation of waste (all waste labeled as infectious)
- Much more waste incinerated



Change in waste amount

x 50% - 200%





COVID-19 crisis



Environmental impact of personal protective equipment distributed for use by health and social care services in England in the first six months of the COVID-19 pandemic

Chantelle Rizan^{1,2,3,4}, Malcolm Reed² and Mahmood F Bhutta^{1,2,5}

The carbon footprint of all PPE supplied:

Per day, a mean of 591 tonnes CO₂, equivalent to 27,000 times the average individual's carbon footprint, or around 244 return flights from London to New York.

Conclusion

The environmental impact of PPE is substantial and requires urgent review to mitigate effects on planetary health

Journal of the Royal Society of Medicine 2021; 0(0): 1–14

Scenario analysis: Mitigating the environmental impact of PPE

- The carbon footprint of PPE was reduced by 12% through manufacturing PPE in the UK
- Eliminating glove use would have reduced the carbon footprint by 45%
- Use of a reusable gown (depending on environmental impact categories): reductions of 17% to 86%

COVID-19: time for re-evaluation?



The art of medicine

A history of the medical mask and the rise of throwaway culture

Bruno J Strasser, Thomas Schlich

“To avoid a shortage of masks during the next pandemic, one should look beyond the creation of large stockpiles of disposable face masks and consider the risks of the throwaway consumer culture applied to life-saving devices”.

COVID-19: time for re-evaluation?

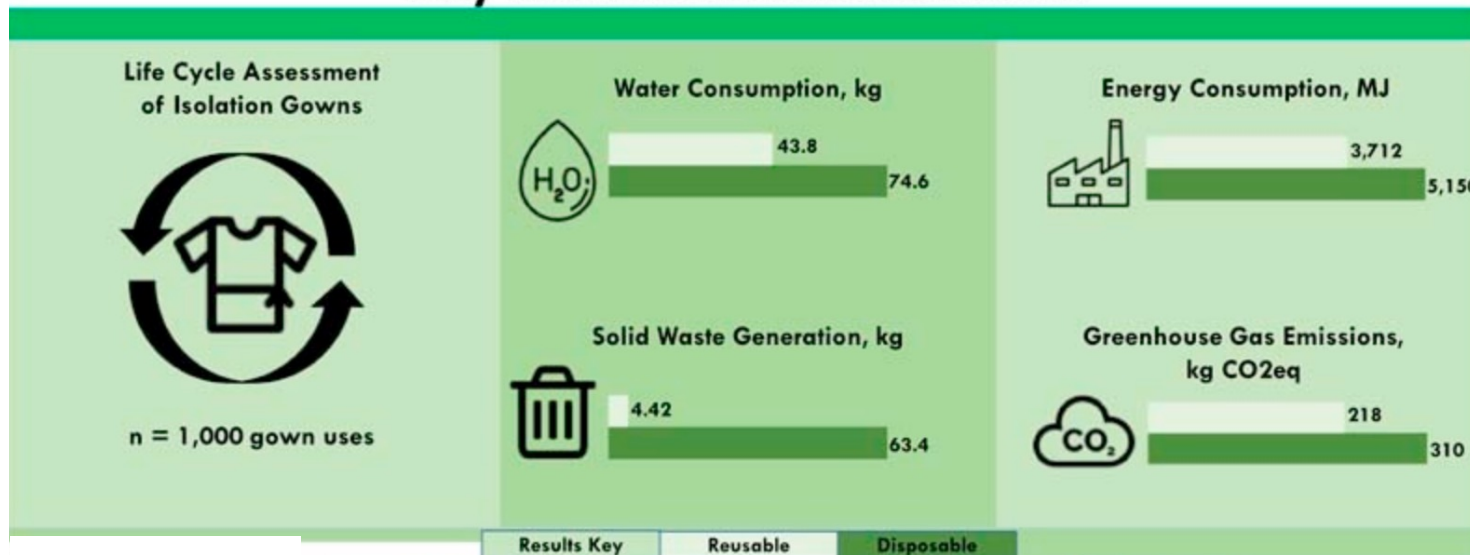
In 2020, the UK NHS started a pilot project in the UK to introduce reusable IIR certified face masks

Now showing off the height of surgery fashion, we have [@alexiskeech](#) wearing a reusable mask and a washable gown. The look for 2021 - a must wear outfit for the NHS.



Sustainable medical textiles = reusable clothing

Reusable Gowns Outperform Disposable Gowns in Key Environmental Indicators



American Journal of Infection Control 2018

Reusable gowns in hospitals: More sustainable and less expensive solution



Overview over running costs[★] for single use PPE gowns and multiple-use gowns at different price scenarios (calculations in Danish Kroner, DKK, and based on prices at 15th of March 2020)

Consumption/price/unit	Single-use gowns Normal world market price 4 DKK/unit.	Single-use gowns (Q1 2020) Average world market price 15 DKK/unit	Single-use gowns (Q1 2020) Maximum world market price 47 DKK/unit	A Multiple-use (Laundry and logistics) 6 DKK/unit	B Multiple-use (Laundry and logistics) 10 DKK/unit
Normal consumption / year 230.000 units	920.000	3.450.000	10.810.000	1.380.000	2.300.000
Covid-19 (low level of infections) 1.170.000 units	4.680.000	17.550.000	54.990.000	7.020.000	11.700.000
Covid-19 (high level of infections) 2.340.000 units	9.360.000	35.100.000	109.980.000	14.040.000	23.400.000

- ★ Running costs for single-use PPE gowns does only contain buying prices, and not warehousing, logisitcs and waste management.
Running costs for multiple-use PPE gowns contains only costs related to laundry and logistics, and not the actual procurement of gowns.

Courtesy of Susanne Backer
Circular Economy Adviser, Central Denmark Region

Disposable vs. reusable in surgery



The Royal College of Surgeons of England



<https://www.rcseng.ac.uk/news-and-events/events/webinars/>

COVID-19: time for re-evaluation?



COVID-19 as a catalyst for a change of healthcare “throwaway” mentality?

YES!

Healthcare sector - need for more sustainable (reusable) products



Opportunities

- More resilient medical supply
- Financial gains
- Reduced environmental impact
- Less solid waste
- Local /domestic domestic production & services
- ...

Challenges

- Rethinking design for clinical applications
- Green chemistry
- Decontamination / reprocessing standards
- Infrastructure / logistic change
- Human factor
- ...

Broader acceptance of need for more sustainability



Sustainability in PPE: addressing the challenges through standardization

Online
Workshop



Sustainability in PPE: addressing the
challenges through standardization

18th March 2021 - 9:30 to 16:00

<https://www.cencenelec.eu/news/events/Pages/EV-2021-21.aspx>

Circular healthcare programme



European health systems drive markets towards **toxic-free** products that conserve finite resources, **minimise waste**, and contribute to an ethical supply chain and **circular economy**

Consider this hierarchy:

rethink the need, reduce, reuse/reprocess, replace, repurpose, and recycle

Circular healthcare & sustainability

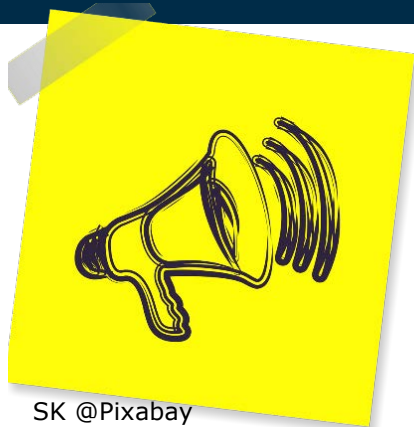


After reducing consumption and maximizing reuse systems, institutions buy products and services that integrate:

- **environmental factors** (no negative effects on the environment and health)
- **social factors** (fair labor, human rights, local employment)
- **economic factors** (longevity, total cost of ownership, disposal cost, quality, innovation)



Working together?



SK @Pixabay

HCWH Europe initiative **Healthcare Market Transformation Network** aiming at:

- ✓ Development of harmonised sustainable procurement criteria
- ✓ Facilitation of dialogue amongst procurers, health professionals, suppliers and recyclers

Working Groups on Medical Textiles, Plastics, ...

<https://noharm-europe.org/healthcare-market-transformation-network>

CleanMed Europe 2021 ONLINE

29 November – 3 December 2021

www.cleanmedeurope.org



Thank you!

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HCWH Europe gratefully acknowledges the financial support of the European Commission (EC)'s LIFE programme.
The views expressed do not reflect the official views of the EC.



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