

# Seeing Through Green

## Critical Thinking for Sustainable Pharmacy Practice

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Canadian Association of Pharmacy for the Environment



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# About Me

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- A Front-line Community pharmacist clinician and healthcare consultant.
- Passionate about quality improvement, lean processes, digital healthcare, and sustainable practices.
- Communicating and empowering through education, speaking, and writing.

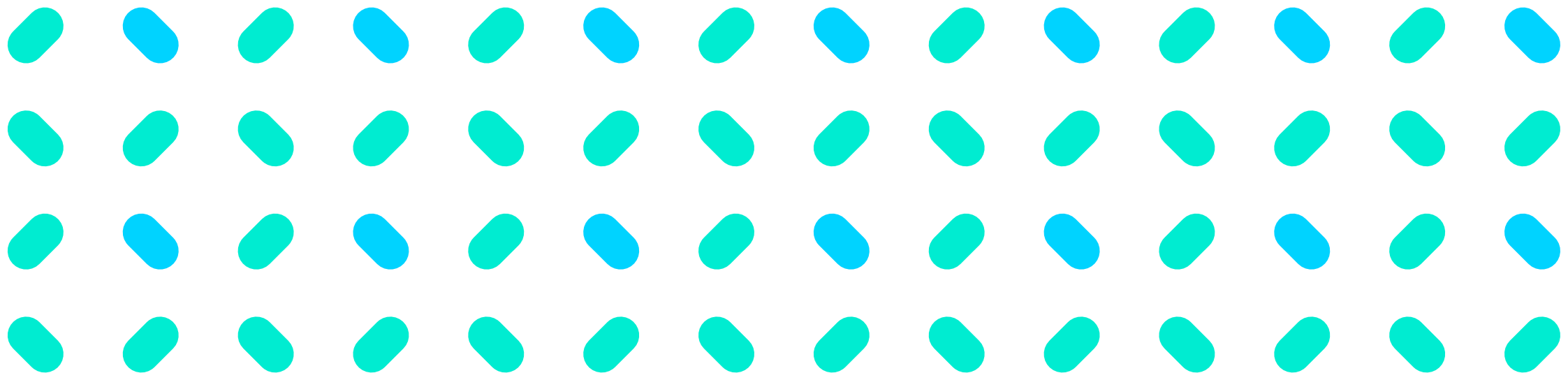


# Objectives

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- Understand and identify examples of Environmental footprint claims (greenwashing) within the healthcare system and pharmaceutical industry.
- Critically analyze environmental claims and strategies put forth by companies.
- Describe approaches to advocate for and apply the above principles within professional practice.

# Introduction

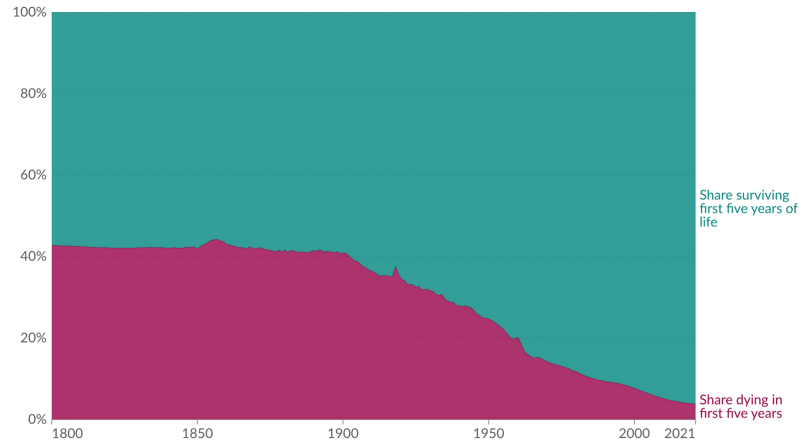




## Global child mortality

The estimated share of newborns<sup>1</sup> who die or survive the first five years of life.

Our World  
in Data



Data source: United Nations Inter-agency Group for Child Mortality Estimation (2023); Gapminder based on UN IGME & UN WPP (2020)

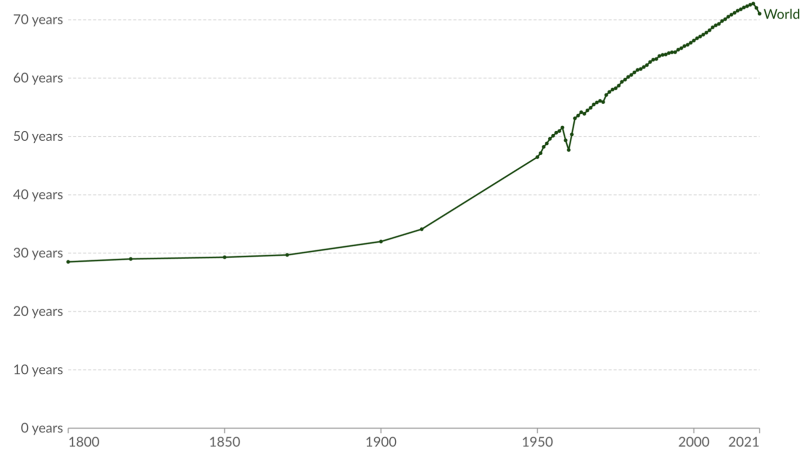
[OurWorldInData.org/child-mortality](https://OurWorldInData.org/child-mortality) | CC BY

1. **Newborn:** A newborn is defined as a baby born alive, and usually refers to neonates – under 28 days old. Read more in our article: [How do statistical organizations define age periods for children?](#)

## Life expectancy

The period life expectancy<sup>1</sup> at birth, in a given year.

Our World  
in Data



Data source: UN WPP (2022); HMD (2023); Zijdemans et al. (2015); Riley (2005)

[OurWorldInData.org/life-expectancy](https://OurWorldInData.org/life-expectancy) | CC BY

1. **Period life expectancy:** Period life expectancy is a metric that summarizes death rates across all age groups in one particular year. For a given year, it represents the average lifespan for a hypothetical group of people, if they experienced the same age-specific death rates throughout their whole lives as the age-specific death rates seen in that particular year. Learn more in our article: ["Life expectancy" – What does this actually mean?](#)

Humanity has made tremendous public health gains by traditional measures such as decreasing global child mortality and increasing life expectancy

Source: [Planetary Health Alliance](#)

# Ecological Paradox

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The state of human health and that of our planet's natural systems have been trending in opposite directions.

Myers, 2017

# Six of the Nine Planetary Boundaries Exceeded

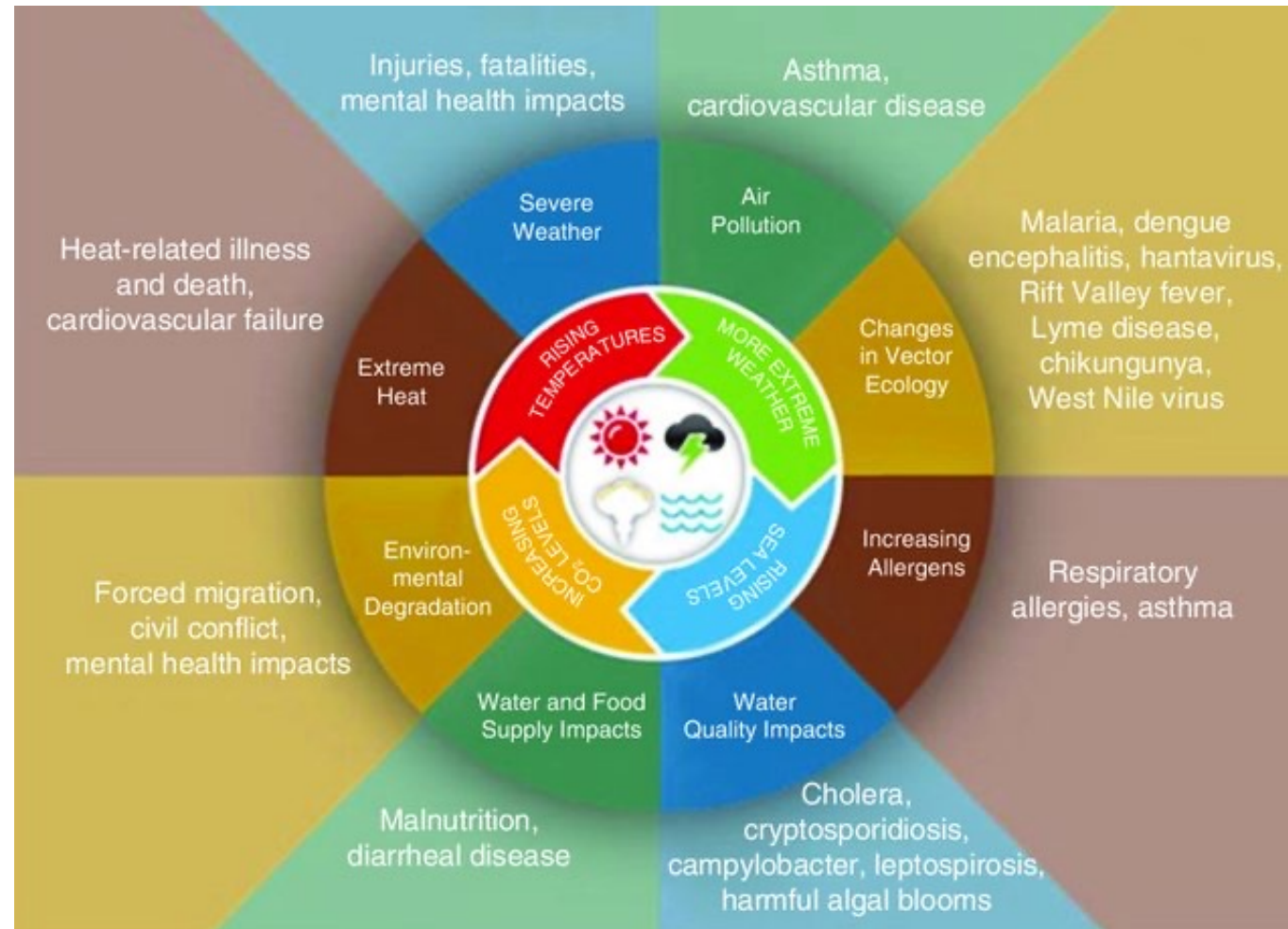
The planetary boundaries concept presents a set of nine planetary boundaries within which humanity can continue to develop and thrive for generations to come.

1. Climate change
2. Loss of biosphere integrity
3. Land-system change
4. Altered biogeochemical cycles
5. Freshwater change
6. Novel entities



Azote for Stockholm Resilience Centre, Stockholm University. Based on Richardson et al. 2023

# Impact of Climate Change on Human Health



# Ecological Paradox REVISITED

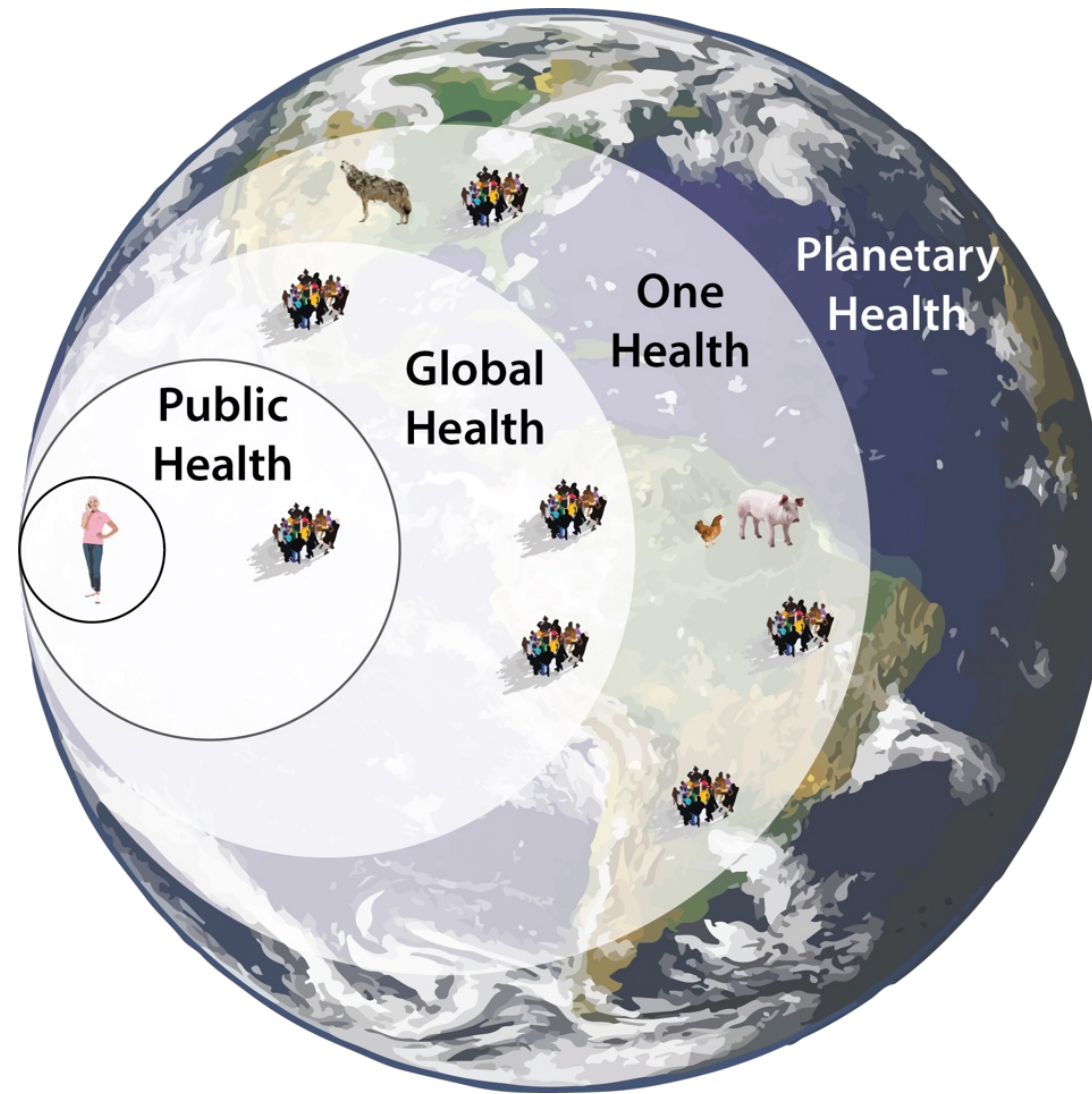
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We have been borrowing against the health of future generations to realize economic and development gains in the present.

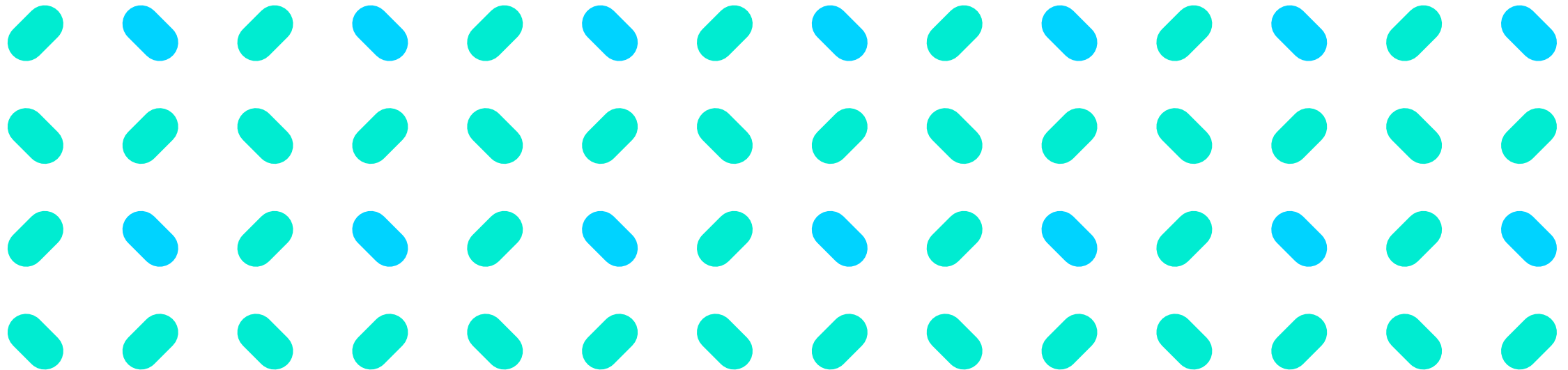
Rockefeller Foundation –  
Lancet Commission on  
Planetary Health, 2015





Graph: ERIC MARTY, "What Is Planetary Health?", Forbes Apr 22, 2021

# Healthcare Carbon Footprint





## What is the Global Healthcare sector's carbon footprint?

Global health care sector's footprint is equivalent to

**4.4%**

of global net emissions.



## Main Cause of the Healthcare Sector's High Carbon Footprint?

71% of health care's global climate footprint is attributed to its supply chain, including the production, packaging, transportation, and disposal of goods and services.



United States 27%

China 17%

European Union 12%

Japan 5%

Russia 4%

Brazil 2%

India 2%

South Korea 2%

Canada 2%

Australia 2%

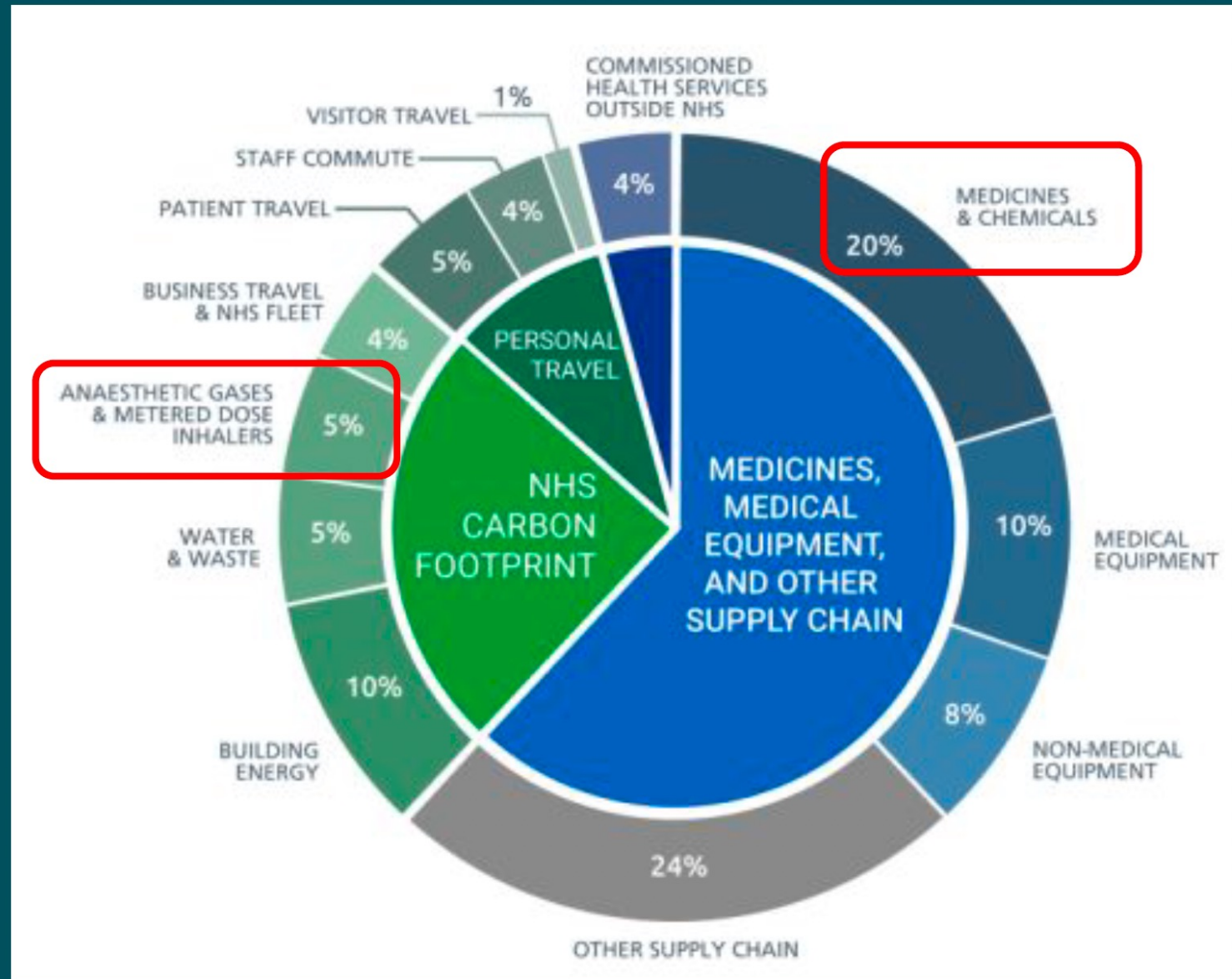
All other nations 25%

**Top ten emitters plus all other nations as percentage of global health care footprint.**

Karliner, Josh, et al. "Health care's climate footprint: the health sector contribution and opportunities for action." *European journal of public health* 30.Supplement\_5 (2020): ckaa165-843.



**Pharmaceuticals  
are 25% of the  
healthcare carbon  
emissions**



Source: NHS 2022

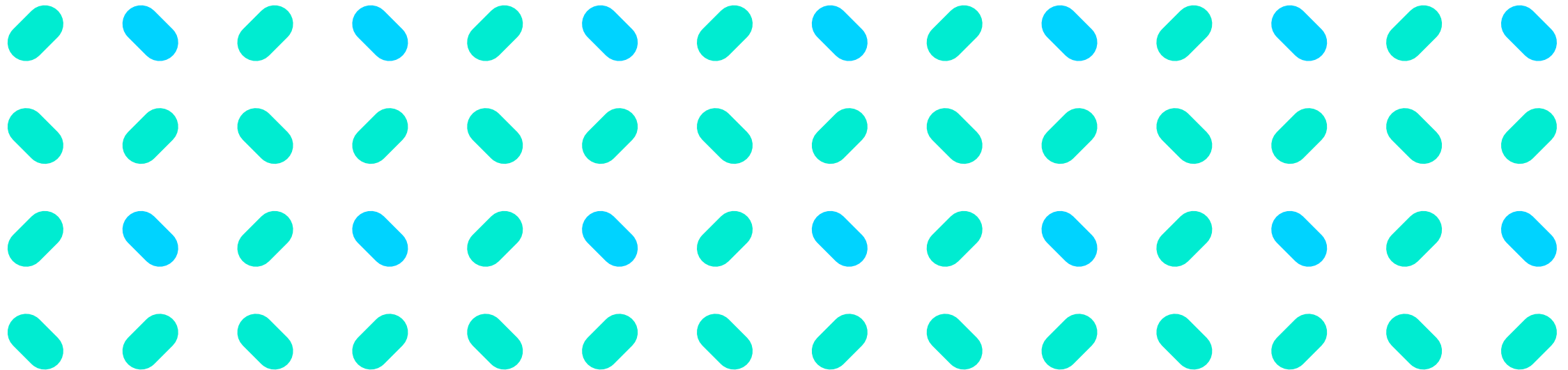
# Broadening Our Environmental Perspective

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- Although cutting carbon emissions from pharmaceuticals is essential, it represents only a part of the larger effort to lessen our environmental impact.
- This leads to the idea of environmental footprint claims, which cover a broader spectrum of environmental effects.



# Environmental footprint claims



# Increased Environmental Awareness and Advertising

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- Consumers are becoming increasingly environmentally conscious.
- Consequently, using environmental claims in advertising has become a common practice.



# What are Environmental Claims?

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- **Definition**

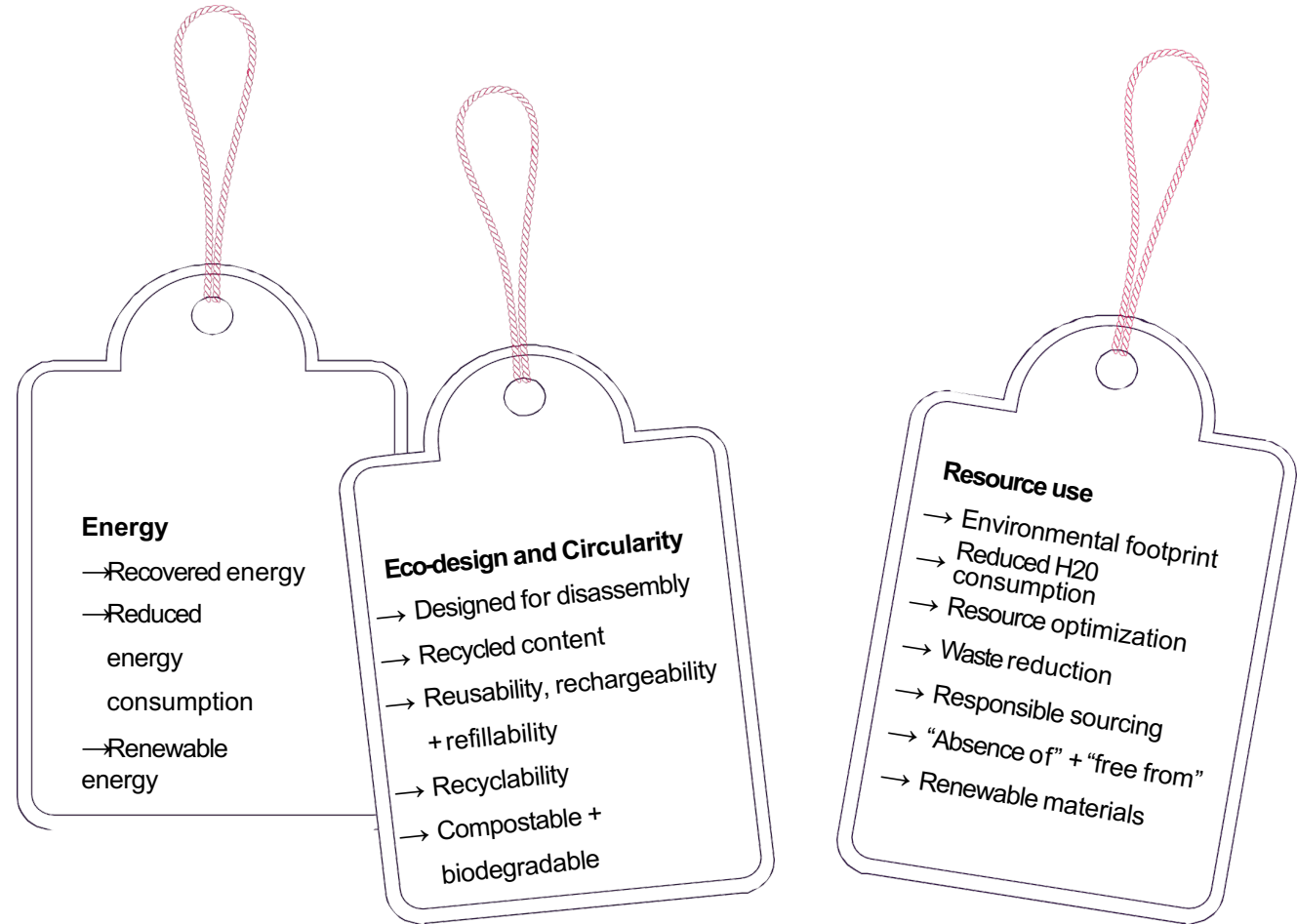
- Assertions about the positive environmental attributes of goods and services.
- Can relate to production, packaging, distribution, usage, consumption, disposal, and their environmental impacts.

- **Communication Channels**

- On-pack labels
- Advertising materials
- Point-of-sale displays
- Websites
- Social media

# Types of environmental claims

Several types of environmental claims relate to different product characteristics, including the type of raw materials, sourcing, eco-design, recyclability, and environmental footprint.





# Importance of Truthful Environmental Claims

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- **Consumer Protection**

- Prevents misleading information and greenwashing.
- Ensures fair competition.
- Helps consumers make environmentally friendly choices.

- **Criteria for Claims**

- Must be truthful and accurate.
- Should aim to influence positive consumer behavior changes.

# The Risks of Misleading Claims

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- **Definition of Greenwashing**

- False or misleading claims about the environmental benefits of products or services.
- Can give the impression of being more environmentally friendly than they are.

- **Consequences for Brands**

- Tarnished brand reputation.
- Legal and liability actions.
- Loss of consumer trust.
- Risks to investments and investor relationships.



# 5 Examples of Greenwashing



# UN Guidelines for credible sustainability communication

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- In 2017, the UN Environment Program and the International Trade Center published Guidelines for Providing Product Sustainability Information. This publication was an output of the Consumer Information Program of the One Planet network, which is co-led by Consumers International and the German and Indonesian Environmental Ministries.
- This work established guidance on making effective, trustworthy claims on product-related sustainability information, defining five fundamental and five aspirational principles.
- In parallel, the ISO 14020 family covers three types of labelling and declaration schemes.

## UN Fundamental Principles for an effective, trustworthy sustainability claim









- Reliability
- Transparency
- Relevance
- Accessibility
- Clarity

# Making claims using Life Cycle Assessment (LCA)

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- Similar to ISO, the European Commission has developed a harmonized environmental footprint methodology to measure and communicate the environmental performance of products and organizations.
- The resulting methods are the Product Environmental Footprint (PEF) and the Organization Environmental Footprint (OEF).
- These two methods cover 16 potential environmental impacts, including climate change, as well as impacts related to water, air, resources, land use and toxicity.
- These are the leading international standards of LCA and today's best-regarded approaches to substantiating environmental footprint claims.

# Environmental communication types according to ISO

	<b>Type I</b> 	<b>Type II</b> 	<b>Type III</b> 
<b>Format</b>	Eco-Label	Self-Declaration	Environmental Declaration Eco-Profile
<b>Objective</b>	Promote the best products in a given category	Communicate environmental claims with written statements or self-made labels (not recommended)	Compare all products of market segment in a standard format
<b>Standard</b>	ISO 14024	ISO 14021 and 14026 for environmental footprint claims	ISO 14025 and ISO 14027 for carbon footprint
<b>Comparability</b>	Low	Limited and not standardized	Product/Sector comparability (Product Category Rules)
<b>Verification</b>	Third-party certification (limited in time)	Not independently certified Should be verifiable and transparent	Verified
<b>LCA Life Cycle Analysis</b>	Needed in some cases. E.g., some carbon footprint labels	Optional, but recommended to substantiate claim	Mandatory
<b>Example</b>	  	To be developed by brands or companies	 

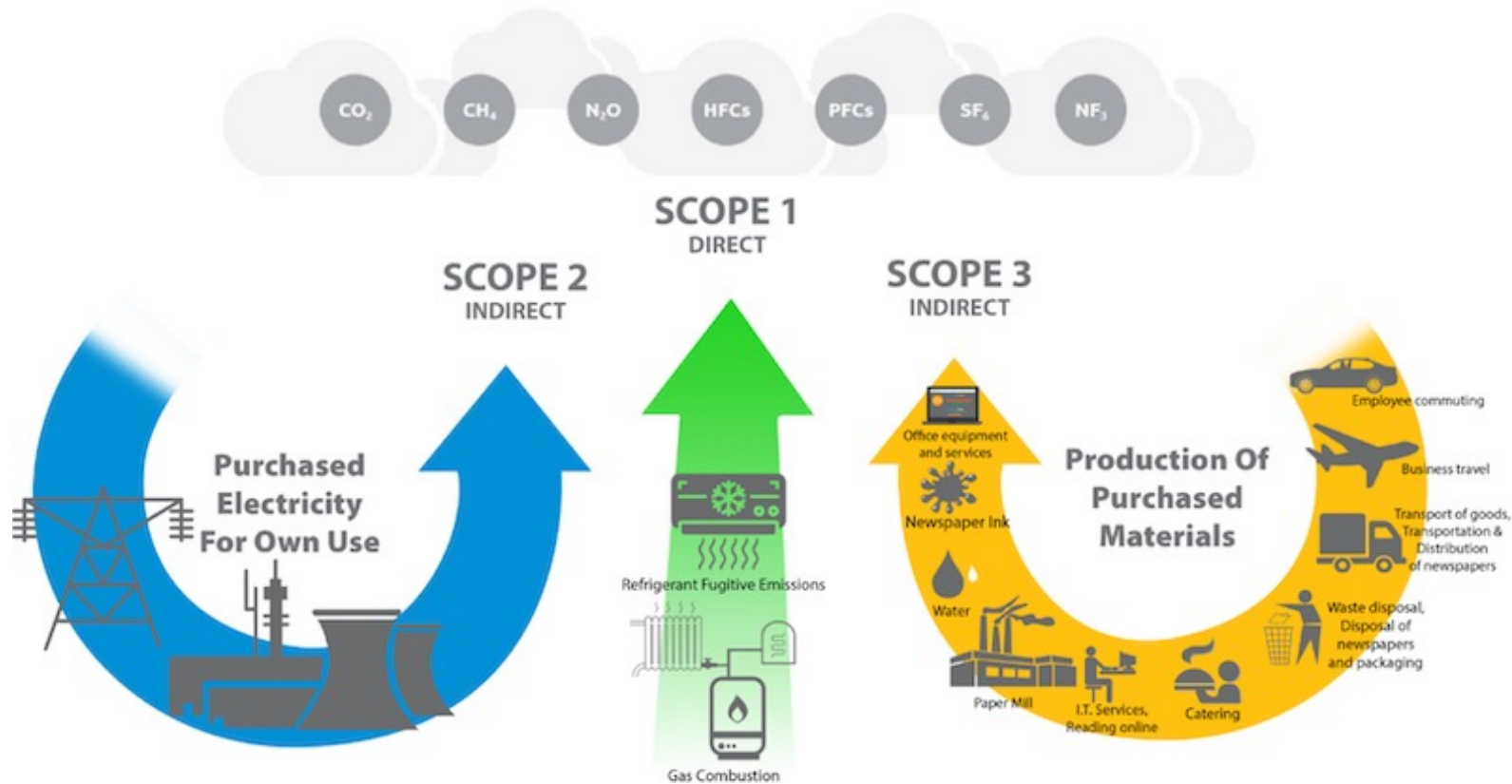
# Canadian New Laws Targeting Greenwashing

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- Bill C-59 passed the third reading at the Senate without amendments on June 19, 2024, and received royal assent on June 20, 2024.
- It introduces key amendments to Section 74.01 of the Competition Act (Canada) (Act) to address "greenwashing"—false, misleading, or deceptive environmental claims made to promote a product or a business interest.
- While not specifically targeting the oil and gas industry, climate advocacy groups have long been critical of environmental claims made by the oil and gas sector, arguing that investment in fossil fuel production is inconsistent with reaching global climate goals.



# What are Scope 1, 2, and 3 Emissions?





# Example: Pfizer

[Science](#)[Products](#)[Stories](#)[Newsroom](#)[About](#)[Careers](#)[Investors](#)[Contact Us](#)

## Our Climate Ambitions: to become Net Zero

We have demonstrated our commitment to climate action through our history of greenhouse gas (GHG) emission reductions, with our first formal GHG goal set in 2001. Through successive goal periods, we reduced our GHG emissions by more than 60 percent over the period 2001 to 2020.

As one of the first companies to receive validation of our GHG reduction goal by the [Science Based Target Initiative](#) in 2015, Pfizer remains committed to ambitious long-term actions. Our drive to effect positive change is demonstrated through our ambition to achieve the Net-Zero Standard.

## Achieve Net-Zero Standard by 2040

We aim to reduce our company (Scope 1 & 2) emissions by 46% by 2030 compared to a 2019 baseline; as an interim milestone to reduce our company emissions by 95% by 2040.

Recognizing that value chain (Scope 3) emissions account for approximately 80 percent of our Greenhouse Gas footprint, we aim to reduce value chain emission by 90% by 2040. As a near term target toward this longer-term goal, by 2025 we aim for 64 percent of our purchased goods and services suppliers by spend to set their own science-based GHG reduction targets. We also aim to reduce emissions, from a 2019 baseline, for upstream logistics by 10 percent and business travel by 25 percent.



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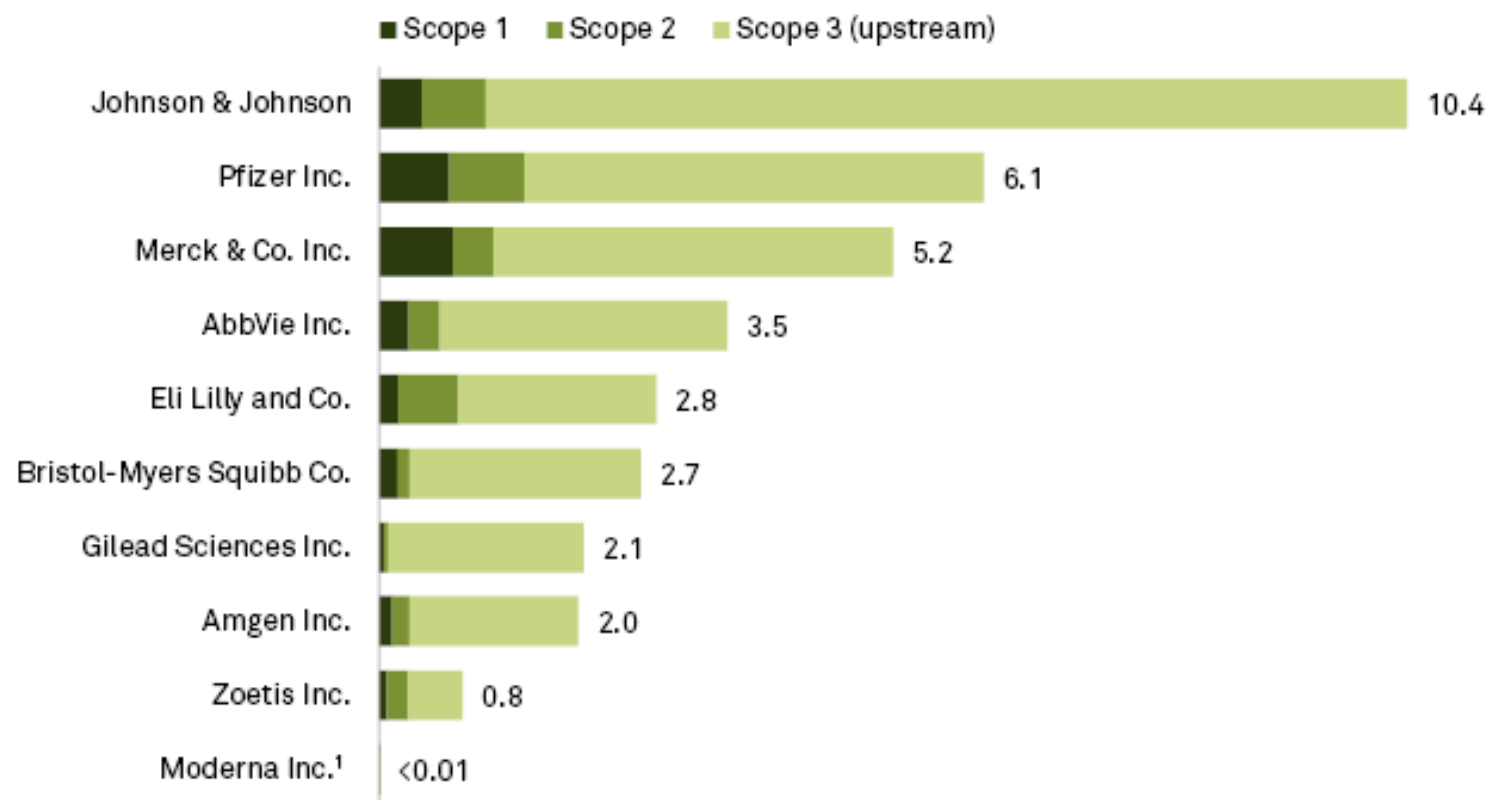
Source: <https://shorturl.at/wsKoP>



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## US biotech and pharma companies by greenhouse gas emissions in 2019 (million tCO<sub>2</sub>e)



Data compiled Sept. 16, 2021.

Scope 1 = greenhouse gas emissions from sources that are owned or controlled by the company

Scope 2 = greenhouse gas emissions from consumption of purchased electricity, heat or steam by the company

Scope 3 = greenhouse gas emissions from other upstream activities not covered in scope 2; from company products

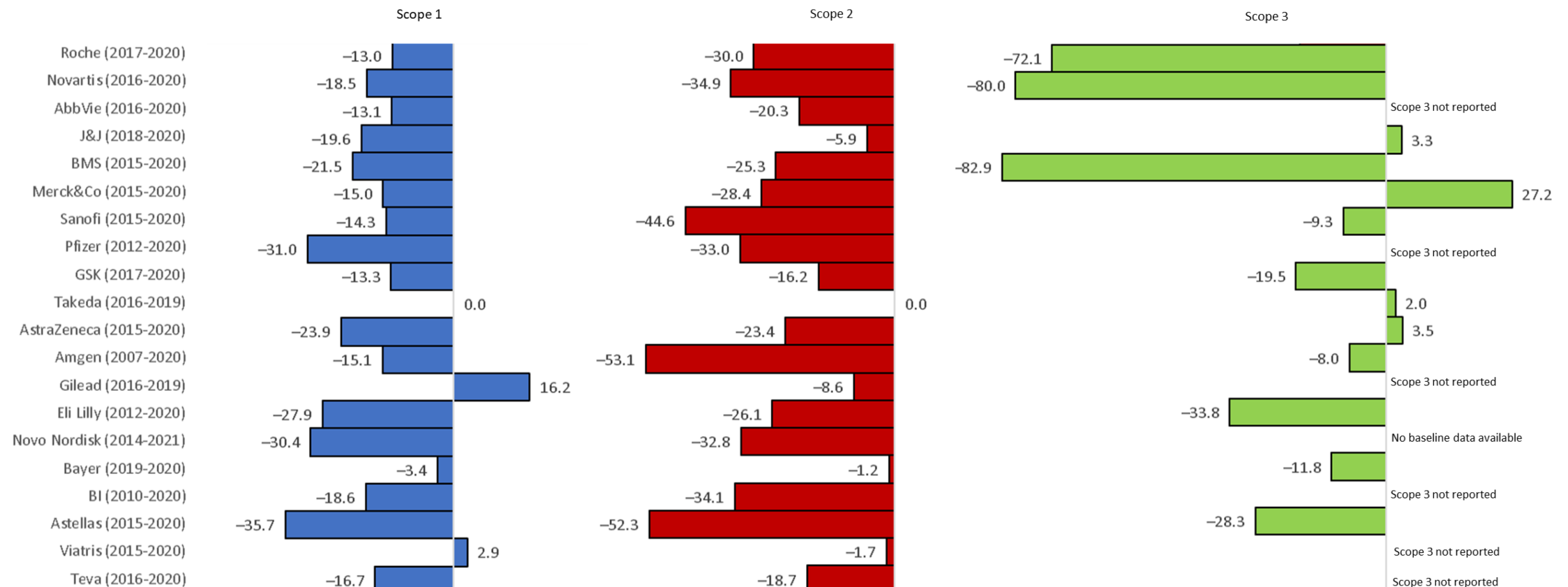
Analysis limited to the 10 largest biotechnology and pharmaceutical companies in the U.S. by market capitalization as of Sept. 15, 2021.

<sup>1</sup> Moderna Inc.'s total greenhouse gas emissions were 7,345 tonnes of CO<sub>2</sub>e in 2019.

Source: Trucost, a part of S&P Global Market Intelligence



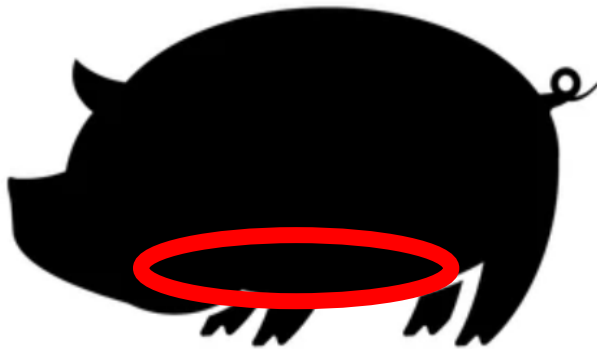
# Reported GHG Emission Reduction Target



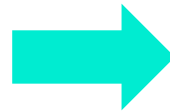
## Counting the carbon cost of heparin: an evolving tragedy of the commons?

Bingwen Eugene Fan<sup>a b c d</sup> ✉, Emmanuel J Favaloro<sup>e f g</sup>

To meet the rising global heparin demand,  
**1.1 BILLION pigs are required annually**



1 kg intestine equivalent to  
6.1 kg CO<sub>2</sub>

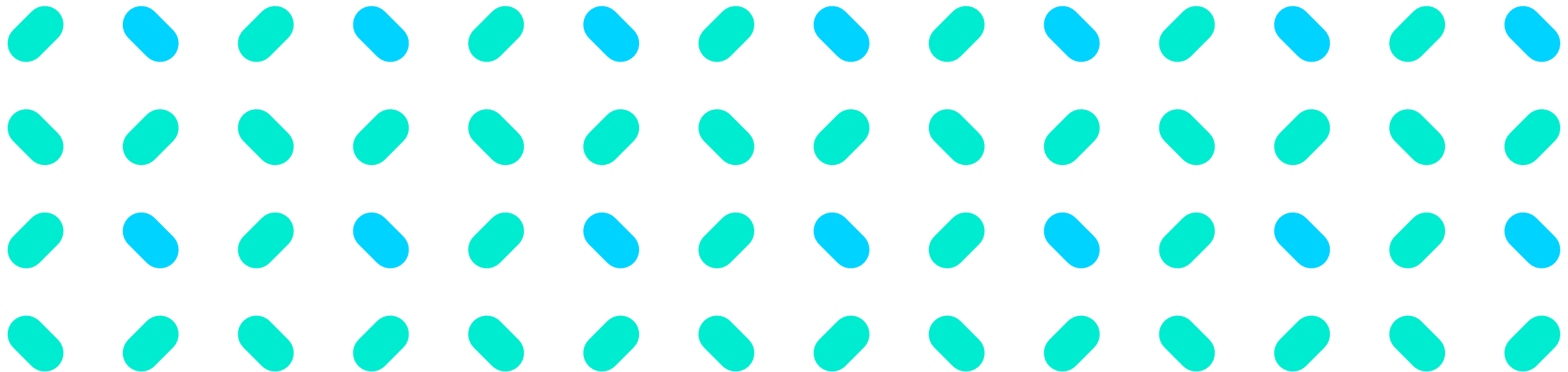


~160-260 mg crude heparin



enoxaparin 40mg syringe x 1-2?

# Focus on Pharmacy



# What can pharmacies do to address climate change?

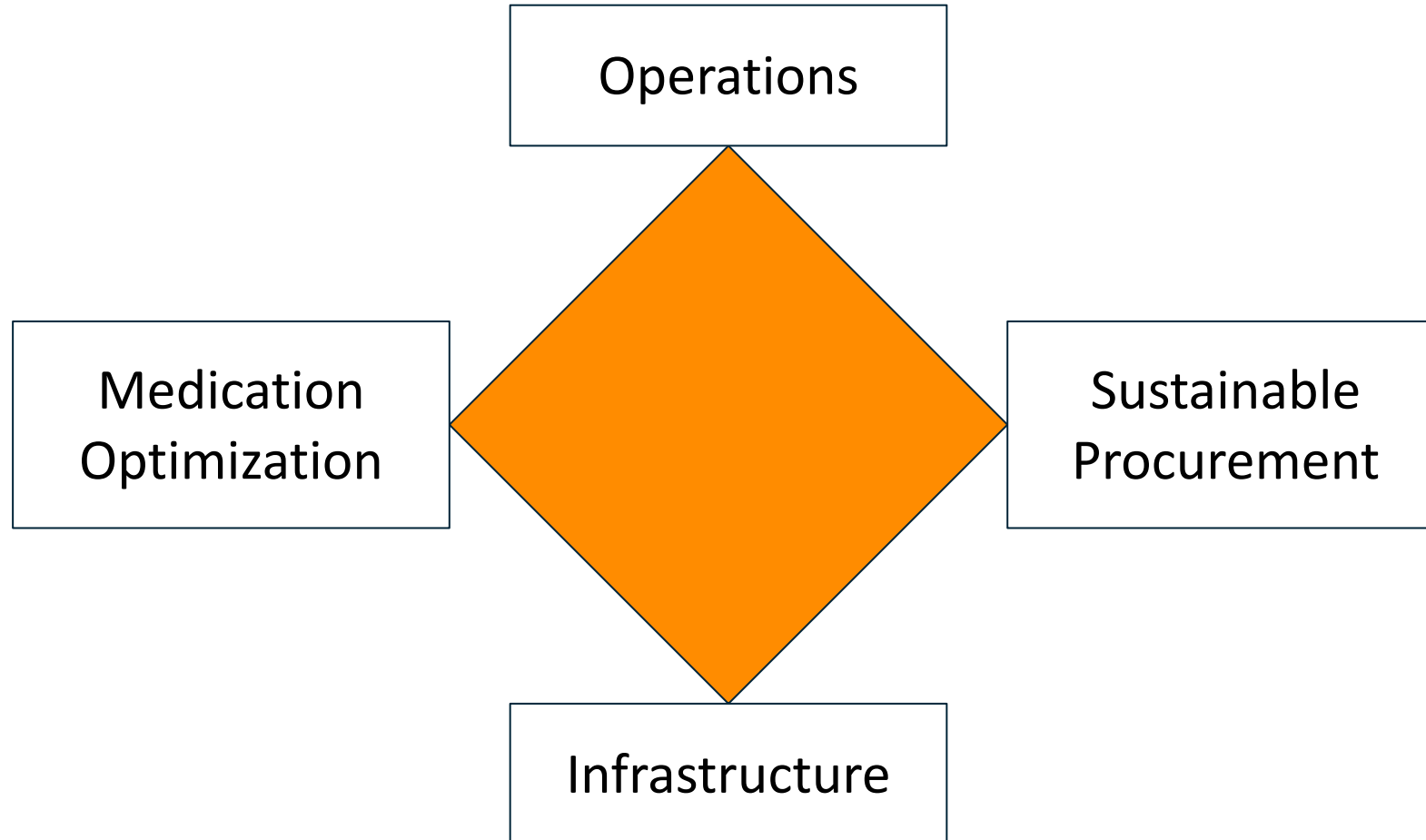
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Mitigation

Adaptation

# Mitigation

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# Medication Optimization

- Deprescribing
- Medication Adherence Improvement
- Proper Disposal of Unused Medications and Devices



deprescribing.org | Proton Pump Inhibitor (PPI) Deprescribing Notes | August 2018

PPI Availability	Available for prescription only	Available for over-the-counter
Omeprazole (Prilosec) <sup>1</sup> Tablet	20 mg	10 mg
Esomeprazole (Nexium) <sup>2</sup> Capsule	20 mg and 40 mg	20 mg
Lansoprazole (Prevacid) <sup>3</sup> Capsule	30 mg	15 mg
Dexlansoprazole (Dexlansoprazole) <sup>4</sup> Tablet	60 mg and 90 mg	30 mg
Ramipril (Altace) <sup>5</sup> Tablet	4 mg	2 mg
Ramipril (Altace) <sup>5</sup> Tablet	2 mg	1 mg

**Legend**

- 1. No known side effects
- 2. Mild side effects
- 3. Side effects are rare
- 4. Side effects are rare
- 5. Side effects are rare

**Key**

- OTC = over-the-counter
- ORAC = over-the-counter
- ORAC = over-the-counter

**Engaging patients and caregivers**

Patients and/or caregivers may be more likely to engage if they understand the reasons for deprescribing and if they understand that deprescribing therapy may not be necessary and the deprescribing process.

**PPI side effects**

- When on ongoing medication is unclear, the side effects may not be necessary and the deprescribing process.
- When on ongoing medication is unclear, the side effects may not be necessary and the deprescribing process.

**Tapering doses**

- No evidence that one tapering approach is better than another.
- Lowering the PPI dose for example, from twice daily to once daily, or taking the dose on alternate days, or stopping the PPI and using on demand are equally recommended during tapering.
- Choose what is most convenient and acceptable to the patient.

**On-demand definition**

Daily intake of PPI for a period sufficient to achieve resolution of the individual self-reported symptoms following proper medication use. The medication is discontinued and the individual's symptoms recur, usually post-prandial, medication is again taken daily until the symptoms recur.

deprescribing.org | Buyère | open



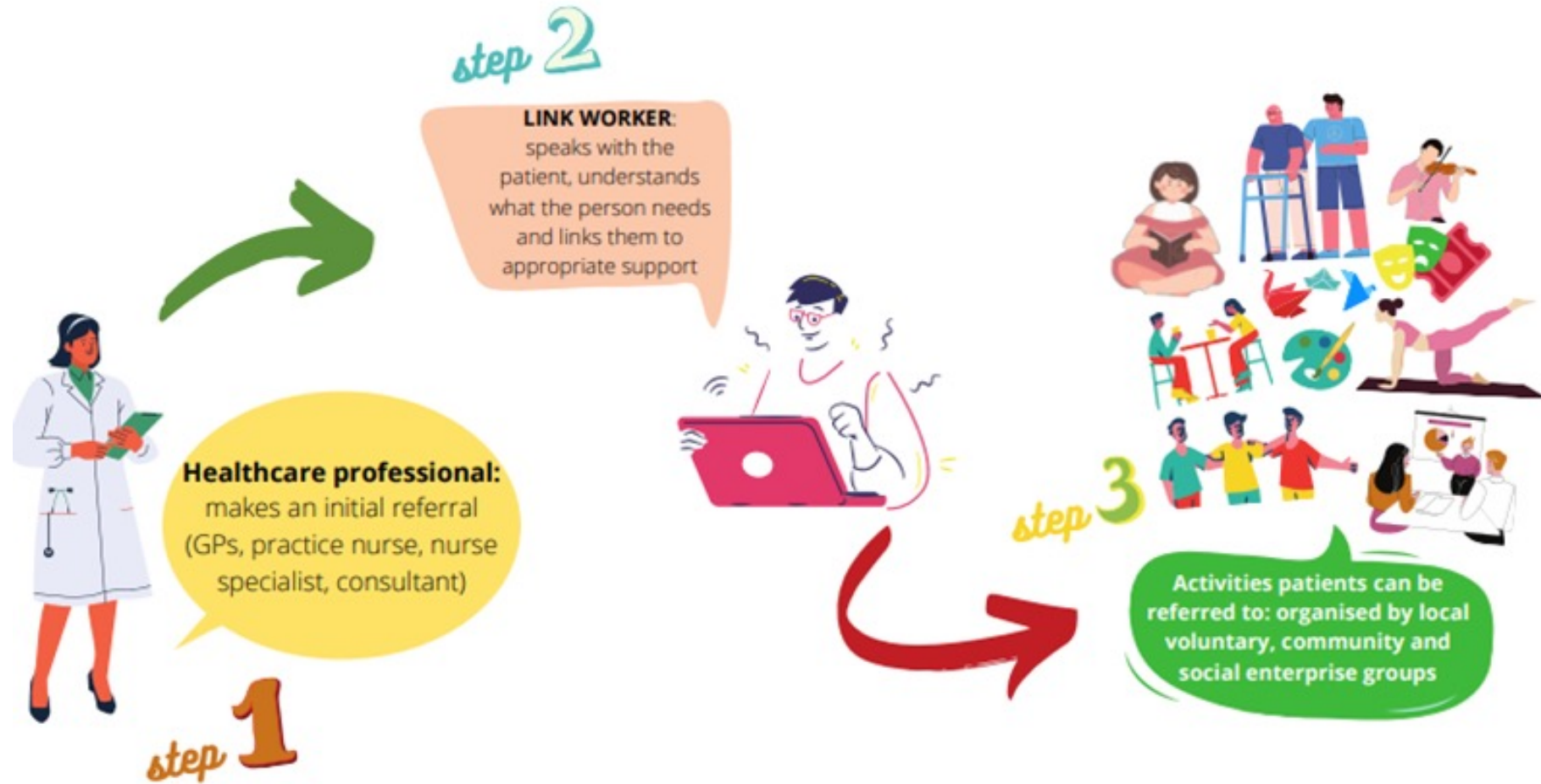
# Pharmacy Operations and Infrastructure

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- Paper-less technology
- Energy-efficient infrastructure
- Water conservation measures
- Waste disposal



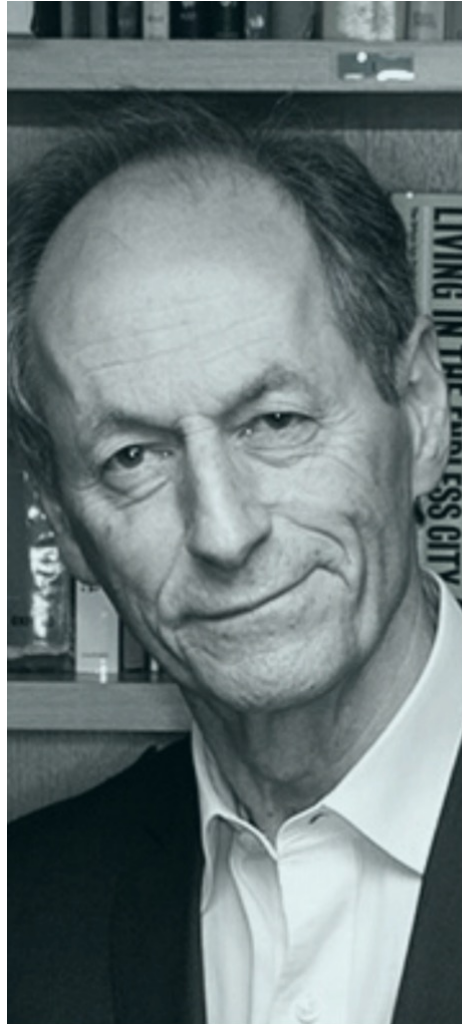
# Social Prescribing





# Social Prescribing

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*Why treat  
people and send  
them back to  
the **conditions**  
that made them  
sick?*

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- Michael Marmot  
*Professor of Epidemiology  
& Author*



# Social Prescribing

PRACTICE BRIEF ■ PEER-REVIEWED

## Social prescribing in pharmacies: What is it, does it work and what does it mean for Canadian pharmacies?

Tarek Hussein, BScPhm, MA ; Nia Cartright, MSc; Jenny Kirschner, BPharm(Hons); Arun Nadarasa, MPharm; Adam Pattison Rathbone, PhD, PGClinPharm, MPharm(Hons) ; Laura Lindsey, PhD

### What is social prescribing?

In the United Kingdom, the National Health Service (NHS)<sup>1</sup> defines social prescribing as an initiative enabling the referral of patients to nonclinical support services; it focuses on a holistic approach to care. Globally, social prescribing is defined as “a means for trusted individuals in clinical and community settings to identify that a person has non-medical, health-related social needs and to subsequently connect them to

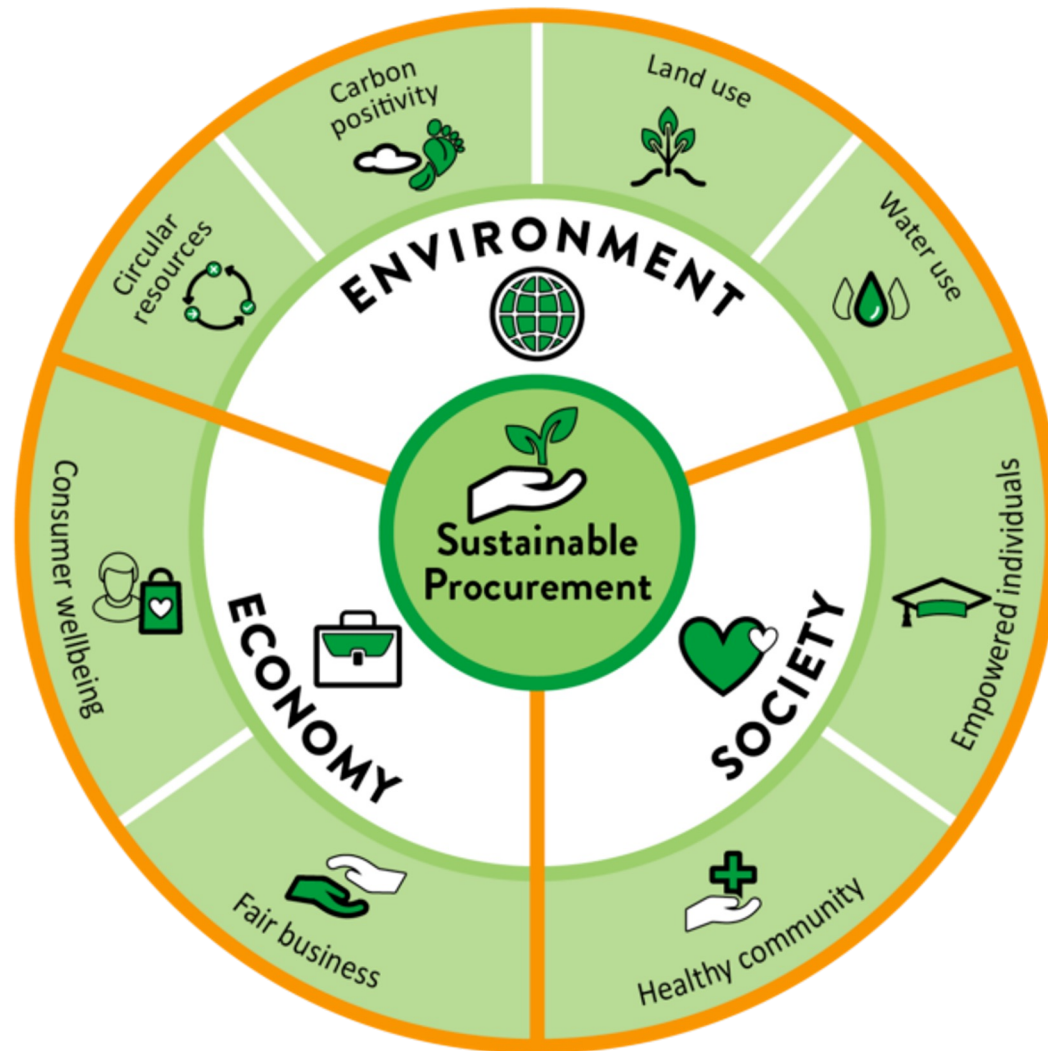
Social prescribing referrals are typically made by family physicians, who screen and assess patients who may be eligible for a referral. Suitable patients are referred to a link worker to consult with the patient and collaboratively decide on an appropriate social activity for their needs.<sup>6</sup> A link worker, sometimes called a community connector or systems navigator, is a person who is usually nonmedically qualified and supports people to work out which community-based sup-



ISPPA



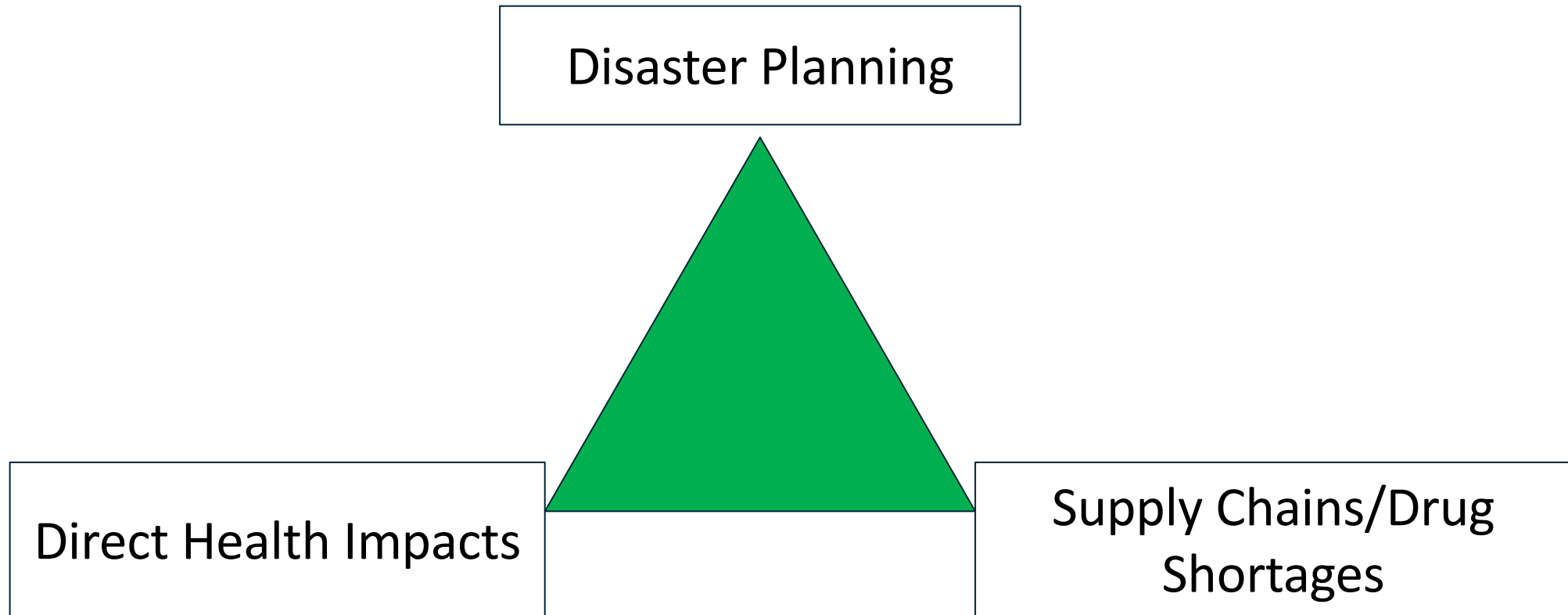
# Sustainable Procurement





# Adaptation

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# Resources

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## PRACTICE DEVELOPMENT **WEBINARS**

### Climate Change and Pharmacy Practice

December 6, 2023 | 5:00 – 6:00 PM EST



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<https://www.pharmacists.ca/advocacy/webinars-continuing-education/webinars/practice-development-webinars/#Dec6>



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# CLIMATE RESILIENT, LOW CARBON SUSTAINABLE PHARMACY

Why • The Case for Change  
What • The Tools for Change  
How • Strategy and Partnerships

This project was undertaken with the financial support  
of the Government of Canada.

Ce projet a été réalisé avec l'appui financier  
du gouvernement du Canada.

Canada

 **CASCADeS**



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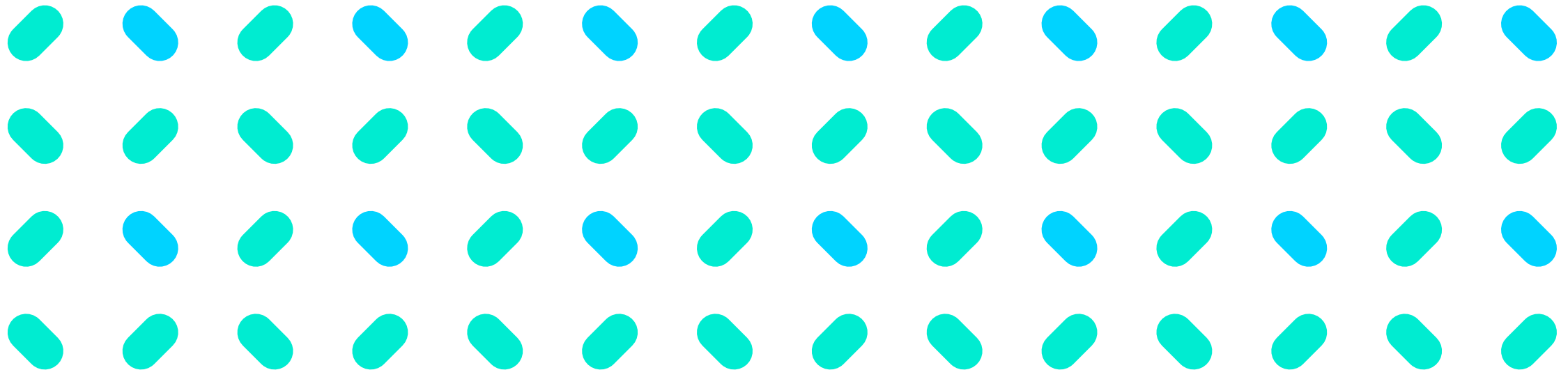
<https://cascadescanada.ca/resources/climate-resilient-low-carbon-sustainable-pharmacy-playbook/>



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# The Pharmacist's 3Es



# EXPLORE

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- Search for local community resources
- Connect with other like-minded businesses and organizations
- Find what inspires you to start



# EVALUATE

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- Identify what you already do
- Seek assistance
- Listen to other's experiences



# ENGAGE

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- Educate your team by acting as a role model
- Share your experience
- Motivate others in your community to follow you





Start. Because you care!

# Final Thoughts

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- **Educate Yourself and Your Team:** Continuous learning about sustainable practices is essential.
- **Take Small Steps:** Begin with simple changes and gradually incorporate more sustainable practices.
- **Engage with Your Community:** Share your knowledge and motivate others to join the effort.
- **Measure and Celebrate Your Successes:** Track your progress and celebrate milestones to stay motivated.
- **Stay Connected:** Join sustainability forums and networks to stay informed and engaged.
- **Resources and Support:** Explore available resources to aid in your sustainable practices journey (provide links to useful websites, guides, and organizations).





# Thank you



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