



The Climate Crisis & Planetary Health **Greening Hospital/Medical Practices in Island Health**

... a Chance to Choose Wisely

This is an Emergency!

Dr. Caroline Stigant and Dr. Jean Maskey

November 26, 2021

Objectives

1. Know that a Climate Emergency has been declared in Canada, and is a health issue
2. Define Planetary Health and understand the contribution of health care to the climate crisis, and where to access tools to minimize our footprint
3. **Brainstorming on how we can Choose Wisely**, and problem solve ways for health care practitioners and systems to mitigate their negative environmental impact. **Where could and should efforts be focused?**
4. **Leave with a personal plan: What can I do now to reduce the Environmental Impact of my Practice in 2022 and the future?**

Planetary Health (PH) Working Group

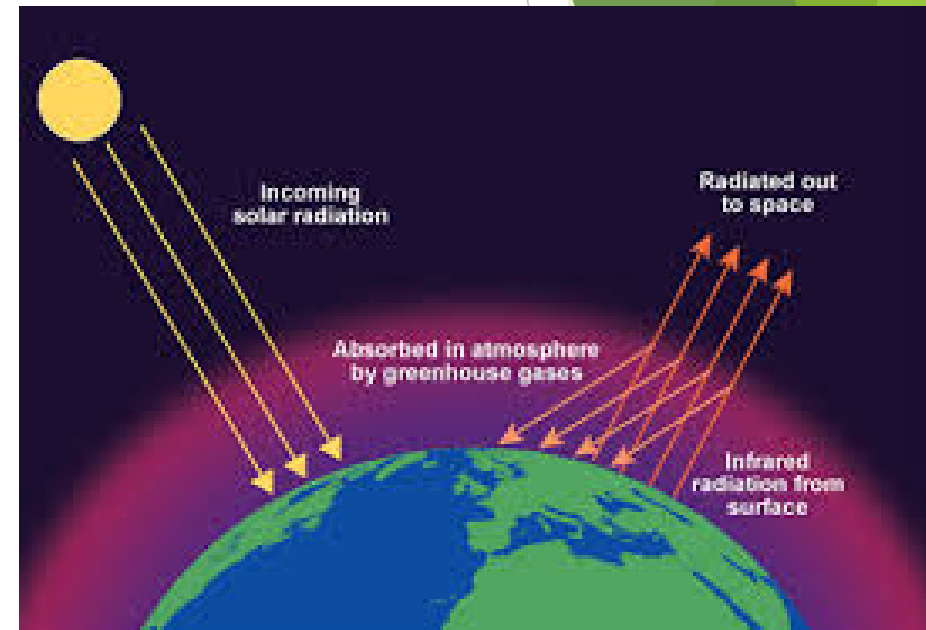
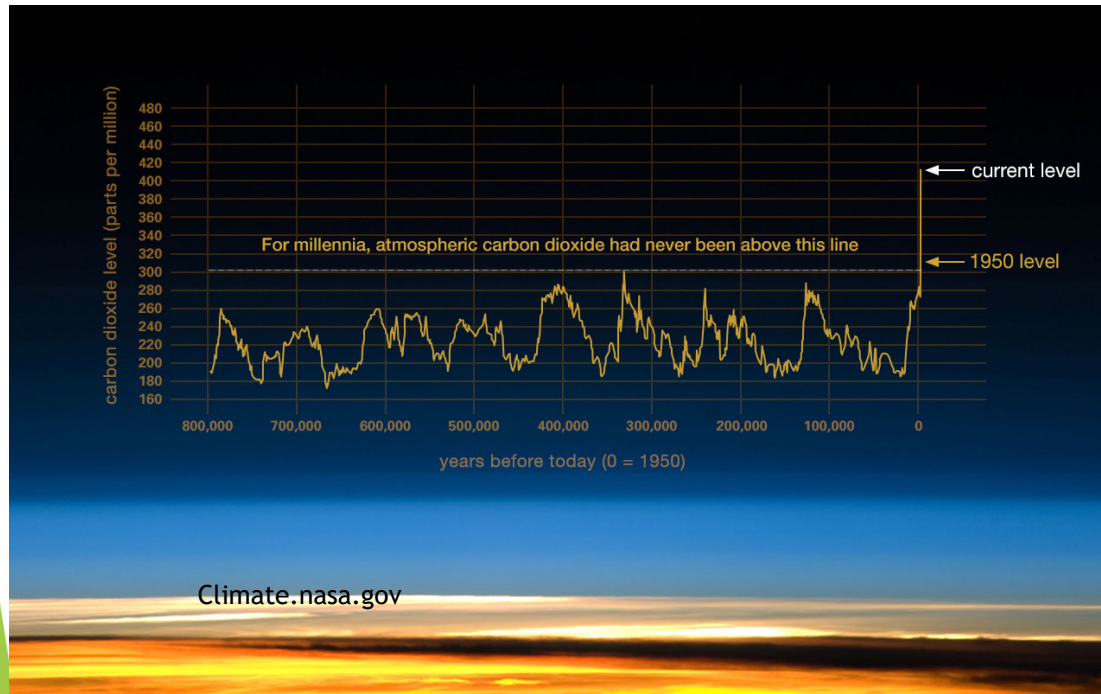
South Island Facility Engagement Grant 2021-2022

- Physicians across practice areas (Hospitalists, Nephrologists, Surgery, Anaesthesia, ICU, ER, Internal Medicine, Medical Microbiology)
- RN educators and allied colleagues in all hospital areas (clinical and non-clinical)
- IH Administrative/Medical leads for Environmental Health and Quality
- Pharmacists

- ▶ **Jean Maskey, MD, FCFP, CCPE**
 - ▶ Hospitalist, RJH and VGH
 - ▶ Canadian Association of Physician Leaders
- ▶ **Caroline Stigant, BSc, MHSc, MD, FRCPC**
 - ▶ Nephrologist, RJH
 - ▶ Member, Canadian Association of Physicians for the Environment
 - ▶ Chair, Sustainable Nephrology Action Planning (SNAP) committee of the Canadian Society of Nephrology

THE CLIMATE CRISIS

WHO: 'The greatest threat to global health in the 21st century'



CO₂: 100x faster rate of atmospheric accumulation, & Double the concentration vs. 800,000 years of historic norms



Macro view: Environment / Humankind Interface:

Could drag >100 million into extreme poverty by 2030 (*World Bank, 2016*)

1 in 4 deaths worldwide are related to the environment (WHO)

Expect epidemic of climate refugees

12.6 million deaths per year (~1/4) are linked to the environment,
2/3 non-communicable

TOP 10 CAUSES OF DEATH FROM THE ENVIRONMENT

Fossil fuel air pollution responsible for 1 in 5 deaths worldwide¹

10.2 million premature deaths annually

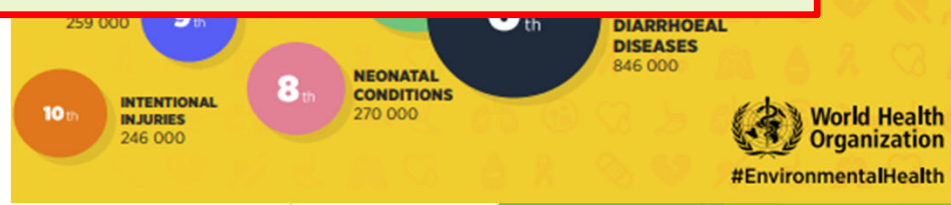
US: 350,000 premature deaths

62% of deaths in China (3.9 million) and India (2.5 million)

North America age 0-4 LRI attributable deaths: 876

Vohra K et al. Environ Res. 2021 Apr PMID 33577774

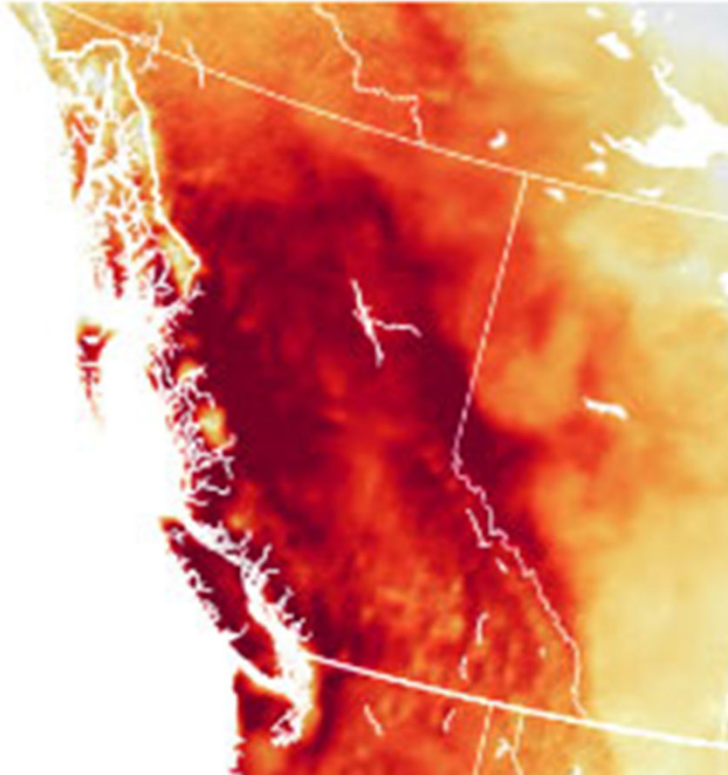
WHERE IS I



World Health Organization
#EnvironmentalHealth

“Heat records are usually broken by tenths of a degree, not 4.6° C”

Greta Thunberg



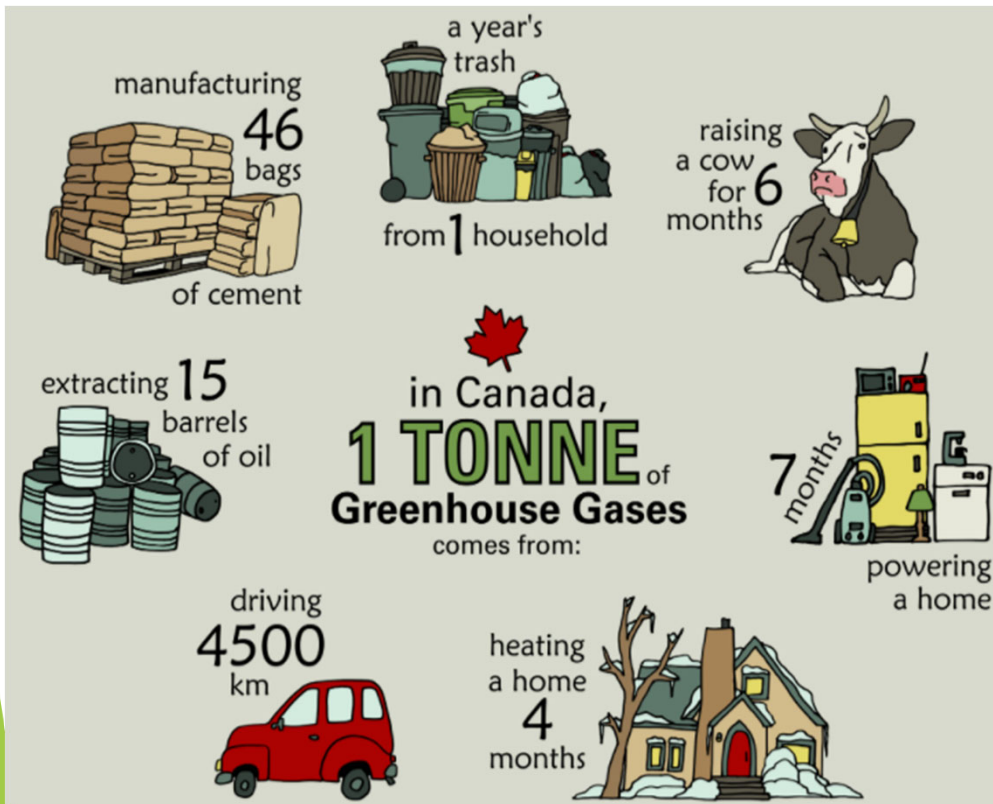
2-meter Air Temperature Anomaly (°C)
-15 -10 -5 0 5 10 15
earthobservatory.nasa.gov

‘This is definitely a rare event, if not a once-in-a-lifetime event, for us here on the coast’

Environment Canada meteorologist Mike Gismondi



Greenhouse Gases add up and are more than CO2



CPJ.ca

Stays in atmosphere for 300-1000 years

Greenhouse Gas	Formula	100-year GWP (AR4)
Carbon dioxide	CO ₂	1
Methane	CH ₄	25
Nitrous oxide	N ₂ O	298
Sulphur hexafluoride	SF ₆	22,800
Hydrofluorocarbon	HFC	14,800
Hydrofluorocarbon	HFC	675
Perfluorocyclobutane	c-C ₄ F ₈	7,390
Perfluoroethane	C ₂ F ₆	12,200
Perfluoropropane	C ₃ F ₈	8,830
Perfluorobutane	C ₄ F ₁₀	8,860
Perfluorocyclobutane	c-C ₄ F ₈	10,300
Perfluoropentane	C ₅ F ₁₂	13,300
Perfluorohexane	C ₆ F ₁₄	9,300

Andersen et al. J Phys Chem A 2011

Climatechangeconnection.org

The Environmental Cost of Health Care - GHG

- ▶ 4.6% of global GHG emissions (2.4Gt CO₂e)¹
- ▶ 10% of US GHG emissions²
 - = 614,000 DALYs ≈ impact of medical error
- ▶ **4.2% of Canadian GHG emissions = 31Mt CO₂**³
 - ▶ 200,000 tonnes other pollutants (primarily other respiratory irritants)
 - ▶ 21,500 DALYs per annum

“Health care pollution is a patient safety issue and pollution prevention ought to be included in ongoing efforts to improve health care safety and quality overall²”

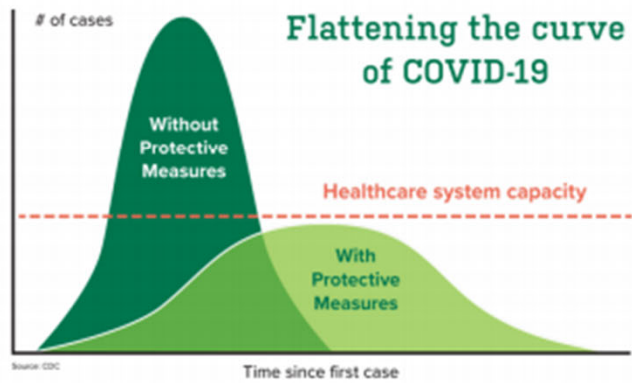
Lenzen M et al. Lancet Planetary Health 2020;4(7):e271-e279
Eckelman MJ, Sherman J. PLoS ONE 2016;11(6):e0157014
Eckelman MJ et al. (2018) PLoS Med 2018;15(7):e1002623

Environmental Impact of Medical Care - Examples

Medical Care Realm	Impact (kg CO2e)
1 mg Morphine ¹ Steam Sterilization	0.002 (10 mg TID liquid Rx → yearly ≈ driving 175 km)
1 Metered Dose Inhaler ² Propellant	.2 (≈ driving 2 km)
Treating ICU patient with septic shock for 1 day ³ HVAC	178 (≈ driving 800 km) Canadian per capita daily CO2 emissions = 55 kg
Daily ER solid waste generation ⁴ 1.99 kg per encounter 672 kg in 24 hrs	3110
Daily emissions from OR (VGH) ⁵ approx. 2/3 contribution is anesthetic gases	8819
Daily emissions from regional renal service ⁶ approx. ¾ from procurement	8236

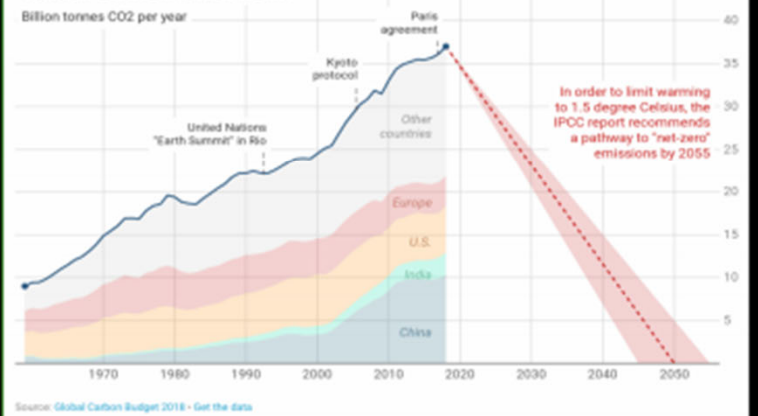
1. McAlister S. BMJ Open 2016
2. Jeswani. J Cleaner Production 2019
3. McGain F. Crit Care Resusc. 2018
4. Hsu S. West J Emerg Med 2020
5. MacNeill A. Lancet Plan Health 2017
6. Connor A. QJM 2010

COVID-19



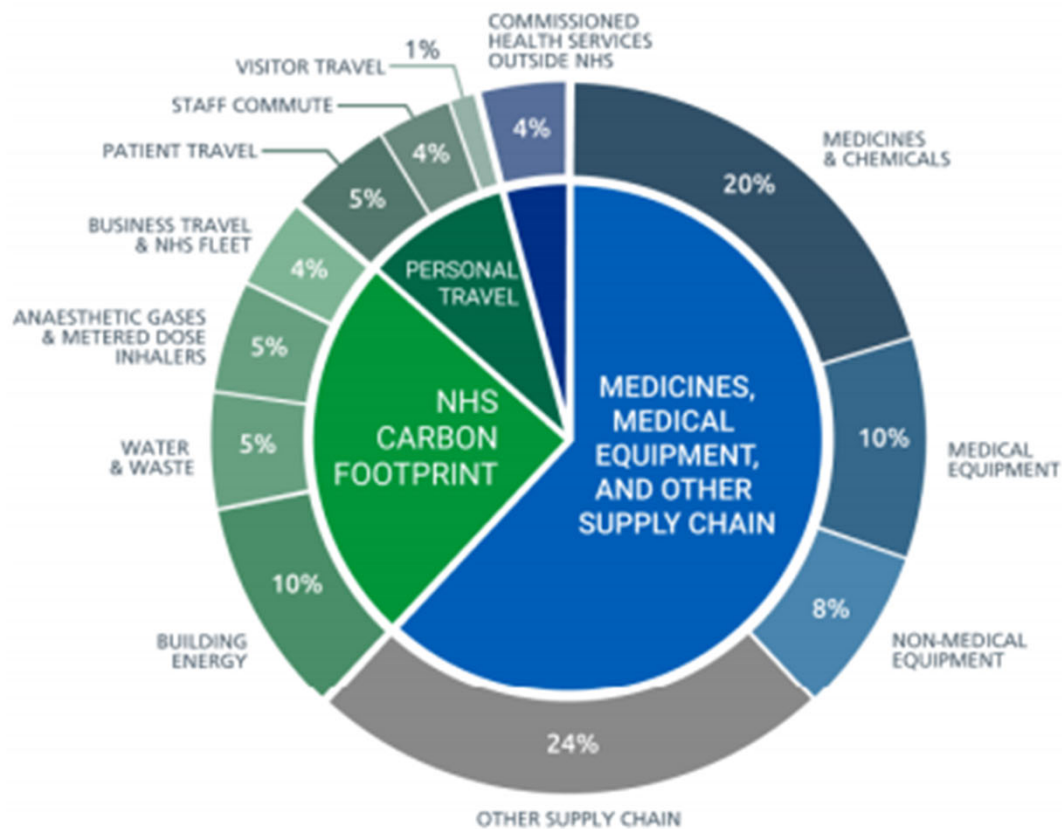
CLIMATE CHANGE

Global Carbon Emissions



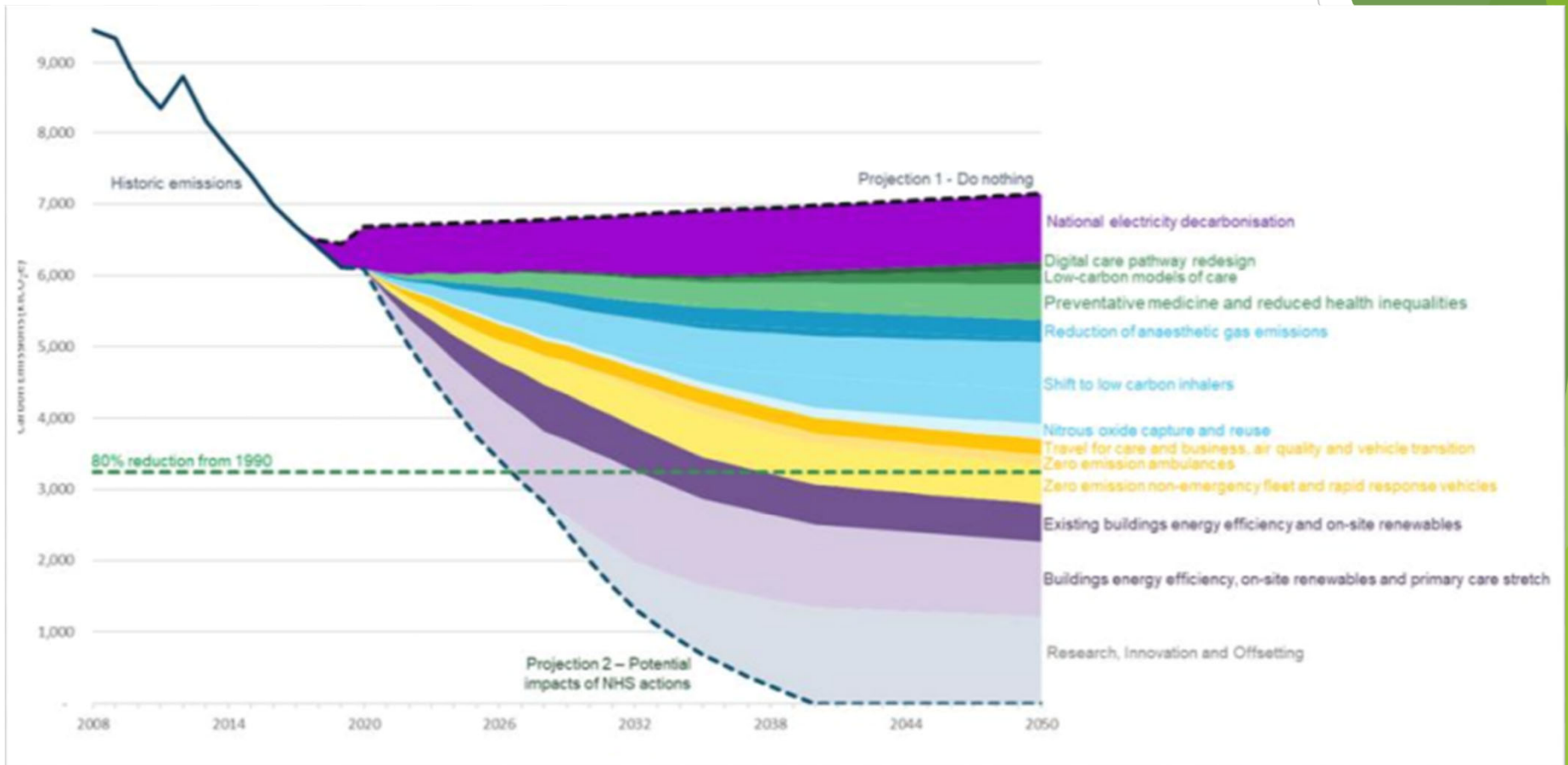
Slide Credit: Dr. A. MacNeill

THE MAJORITY OF HEALTH CARE GHG EMISSIONS OCCUR 'UPSTREAM' OF DIRECT PATIENT CARE



Delivering a 'Net Zero' National Health Service. [England.nhs.uk](https://www.england.nhs.uk)

NHS - 1st medical system to pledge and devise PATHWAY TO NET ZERO (by 2040)



Planetary Health Care Redesign Model

“Transforming the culture of health care towards resource stewardship requires patient-centered care that prioritizes health and wellbeing”

MacNeill A et al. *Lancet Planetary Health* Feb 2021



WHAT CAN I DO ?

Be a good environmental citizen

- ▶ Calculate:
 - ▶ Carbonfootprint.com
 - ▶ Carbonzero.ca - allows offset purchase
- ▶ Consider realms of emissions:
 - ▶ Energy
 - ▶ Transportation
 - ▶ Travel
 - ▶ Food
 - ▶ 'Stuff'
- ▶ Consider 6 R's - note top 3!



Examples: Past 3 Months Using the SIFEI Grant to engage our Hospital community broadly (get a network!)



Before / After

... what a difference collective action makes!



DIRECT PATIENT CARE EXAMPLES

Planetary Health Working group is organising efforts locally:

- ▶ Anesthesia¹
 - ▶ Reduce use of desflurane and nitrous oxide
 - ▶ Low gas flow, gas reclamation, substitute propofol, use regional anesthesia
- ▶ Respiriology
 - ▶ Switch MDIs to PDIs
 - ▶ 96% ↓ emissions reduction; comprises 4.7% of NHS GHG²
- ▶ ORs / Wards
 - ▶ Switch from disposable to washable linens³
 - ▶ 66% ↓ emissions, 84% ↓ solid waste
- ▶ Procurement- can we influence/reduce what is purchased and used?
 - Decrease unnecessary glove use
 - Change how water is supplied to patients to align with best practice to reduce plastic?
- ▶ Waste Stream - appropriate separation of waste
- ▶ **Your ideas??**

1. McGain F. Brit J Anesthes 2020
2. Jeswani H. J Cleaner Production 2019
3. Vozzola E. AORN 2020

BRAINSTORMING YOUR IDEAS AND NEXT STEPS

▶ S

▶ M

▶ A

▶ R

▶ T

▶ SPECIFIC

▶ MEASUREABLE

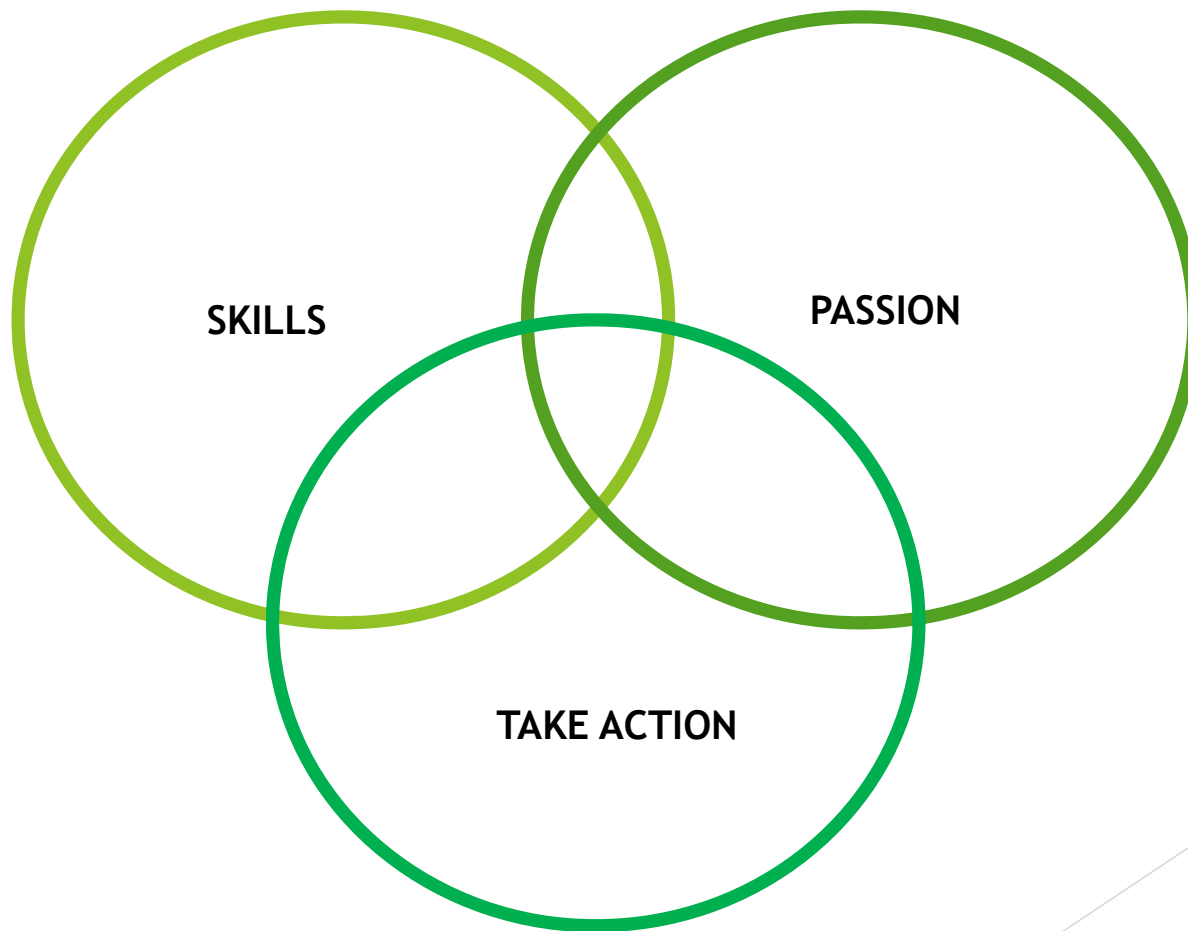
▶ ACHIEVABLE

▶ REALISTIC

▶ TIMELY



How to align yourself for greatest joy and effectiveness:
Choose Project Idea Wisely! 😊



Resources

Be a Planetary Health Care Leader

- ▶ Educate yourself
 - ▶ Health Authority sustainability resources - IH Sustainability 'Green Island Health' on intranet
 - ▶ Sustainability training - Green+Leaders Certification (BC Greencare)
 - ▶ Canadian Coalition for Green Health care - annual awards
 - ▶ Canadian Association of Physicians for the Environment 'Climate Change Toolkit'
 - ▶ Planetary Health Alliance - planetaryhealthalliance.org - yearly conference
 - ▶ Journals - Lancet Planetary Health, Journal of Climate Change and Health
 - ▶ NGO materials - World Bank Climate-Smart Healthcare Report
- ▶ Educate others - peers, attendings, patients, professional organizations, institutions
- ▶ Advocacy / social responsibility - from petitions to political careers!
- ▶ Policy
- ▶ Research
 - ▶ Planetary Health Alliance
 - ▶ Lancet Countdown
 - ▶ UBC PH Action Lab
 - ▶ PH Regional Medical Director, Vancouver Coastal Health
 - ▶ CASCADES Grant
 - ▶ \$6m funding from Environment and Climate Change Canada to create a sustainable health system
 - ▶ CAPE - Canadian physicians for the Environment
 - ▶ Engaging with Health Authority Partners: Occ Health and Safety; PHSA Procurement Leads; Facilities Management; Sustainability Leads, executive Leads

CHALLENGE TO ALL, a call to Action!

Find 3 areas needing improvement in each clinical setting and take on an improvement project!

Invitation to get involved !



- ▶ Connect with us!
 - ▶ caroline.stigant@viha.ca
 - ▶ Jean.maskey@viha.ca
 - ▶ islandgreenhealth@gmail.com
- ▶ **Communication:** Follow us on Island Health Green Pages
- ▶ **Cooperation** with Projects of MOH and elsewhere on Vancouver Island
- ▶ Let's leverage our effectiveness collectively and **CHOOSE WISELY**

***“If not now, then when?....
Later never comes....”***