

Carbon or Care?

Development of HPHs towards 'Climate-Smart' Healthcare.

Connie Gan Cai Ru

Public Health PhD Candidate, Griffith University

School of Medicine, Centre for Environment & Population Health

connie.gan@griffithuni.edu.au

A word cloud centered around the term "Public Health". The words are arranged in a circular pattern, with "Public Health" being the largest and most central. Other prominent words include "Environmental", "Prevention", "Vaccines", "Drinking Water", "Hazards", "Food Safety", "Leadership", "Injuries", "Chronic Disease", "Obesity", "Air", "Toxins", "HIPPA", "Addiction", "Influenza", "Vital Statistics", "Reproduction", "Non-communicable disease", "Preparedness", "Emergency", "Equality", "Violence Management", "Meaningful Use", "Bioterrorism", "Demography", "Restaurants", "Meaningful Use", "Bioterrorism", "Demography", "Restaurants". The words are in various colors and sizes, creating a dense and visually appealing composition.

3-Take Away

#1: Despite its mandate to protect and save lives, the healthcare sector is a major source of carbon emissions.

#2: Healthcare is not prepared for climate change.

#3: 'Real' healthcare need to start now.



Health sector environmental footprint

Greenhouse Gases (GHG) emissions



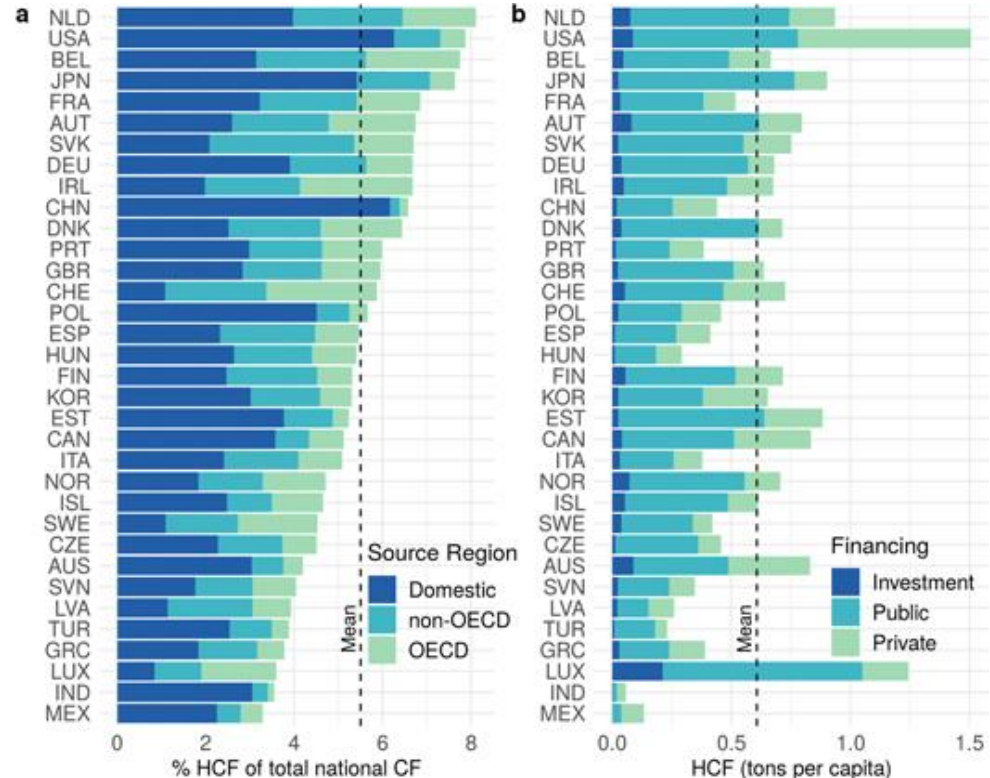
10%



25% of total public sector



7%



P.-P. Pichler, I. S. Jaccard, U. Weisz, and H. Weisz, 'International comparison of health care carbon footprints', *Environ. Res. Lett.*, vol. 14, no. 6, p. 064004, May 2019.



“Over half of the world’s population are now at risk from occupational, environmental or public health threats from improperly treated medical waste.”

(Harhay et al. 2009)



Haemodialysis patients can be exposed to substantial amounts of BPA due to the use of polycarbonate in dialysers, polysulfones in haemodialysis membranes and PVC in tubing⁹. Impaired kidney functions have been associated with a decrease in excretion¹² of urinary BPA. Hence, the use of BPA-containing haemodialysis equipment can put patients at higher risk and due to their renal disease, lead to an increase of BPA in their blood.

A recent study found that newborns receiving medical treatment using four or more devices had a level of BPA in their urine three times higher than babies treated with three or fewer medical devices¹³. Premature infants that receive intensive care treatment are both developmentally and physiologically immature and are therefore at a higher risk of exposure to BPA. Early life exposure is of high concern. Different studies have suggested that young animals have inefficient abilities to transform chemical substances.



Moving towards PVC free healthcare

Hospitals face critical shortage of IV bags due to Puerto Rico hurricane

Hurricane Maria crippled a key maker of fluid bags, and as 'wellness' clinics pay a 600% markup, hospitals unable to afford them scramble to make do without

Hurricane Maria

IV bag shortage

Puerto Rico





Heat Waves

Power shortage

Melbourne

All Melbourne hospitals have been warned to check their emergency generators. Picture: Stock image

VIC NEWS

Melbourne hospitals switch off lights as mercury rises

Penang floods: Several areas in Penang Hospital flooded

NATION

Sunday, 5 Nov 2017

3:07 PM MYT



Flood

7 Hospitals paralysed

Penang



GEORGE TOWN: Several areas were flooded in Penang Hospital after strong winds and continuous rains lashed the state on Sunday morning.

Mozambique's second biggest hospital shattered after cyclone

afp.com 21/03/2019



© ADRIEN BARBIER An aerial view of Beira after the great storm



The health ministry will urge all of the nation's hospitals designated as disaster response medical centers to stock enough fuel to run their power generators for at least three days by March 2021. | GETTY IMAGES

NATIONAL

Japanese health ministry to urge hospitals to enhance disaster preparedness

KYODO

Japan to urge hospitals to enhance disaster preparedness



KYODO NEWS - 12 hours ago - 21:30 | All, Japan



TOKYO – The Japanese health ministry has decided to urge all of the nation's hospitals designated as disaster response medical centers to stock enough fuel to run their power generators for at least three days by March 2021, people close to the matter said Sunday.

***Keeping the blood flowing during times of disaster.
(The Lancet, 2017)***

What do hospitals do in a hurricane? Use their own emergency plans

September 12, 2017 12:18pm AEST



Damage from Irma can be seen in this photo of Kelly McClenthen in Bonita Springs, Florida, as she returned to her home Sept. 11, 2017. AP Photo/Gerald Herbert

La Vita Bella Nursing Home in Texas due to Hurricane Harvey in August, 2017

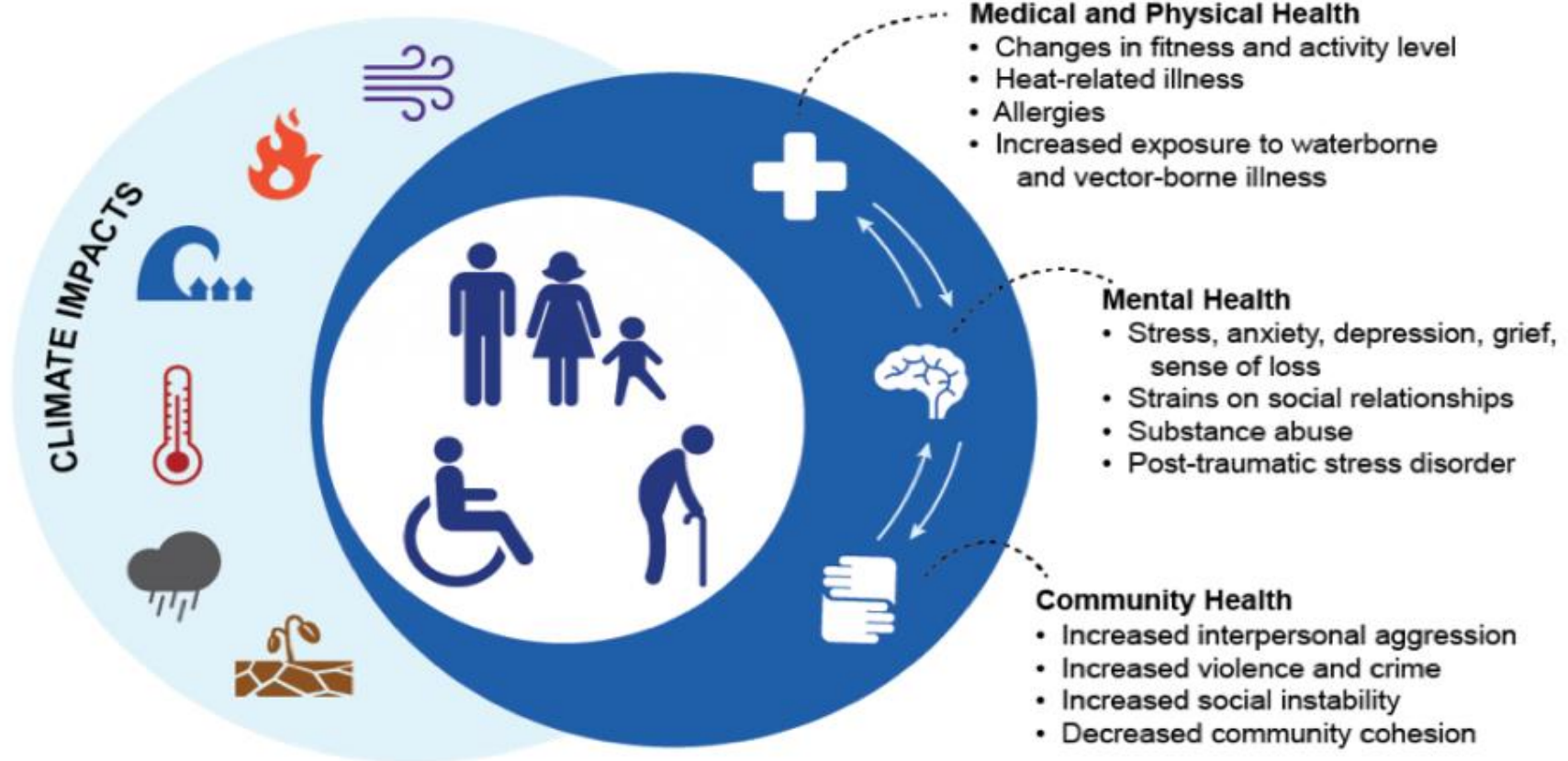


An aerial photograph of a residential area showing significant damage. A large red circle is drawn over the scene. Inside the circle, on the left, is a two-story building with a grey roof and blue-painted lower walls. A dark-colored SUV is parked in front of it. To the right of the SUV is a single-story building with a dark, flat roof. The word "HELP" is painted in large white letters on this roof. The surrounding area is filled with debris, including fallen trees, branches, and scattered building materials. In the background, more buildings and dense vegetation are visible.

• Preparedness

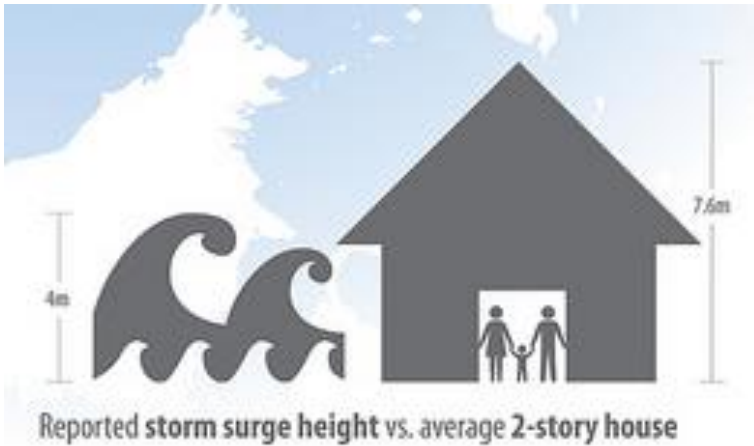
What? Why

Climate Change impacts Physical, Mental, and Community Health



(U.S. Global Change Research Program, 2016)

Climate Change Amplifies Disasters



Top wind speed of cyclones (km/hour)



Tracking the fingerprints of climate change, two years after the Paris summit

“The proportional increase in risk generated by climate change across the various events ranges from single digit percentages to 330 fold.”

(Energy & Climate Intelligent Unit, Dec 2017)

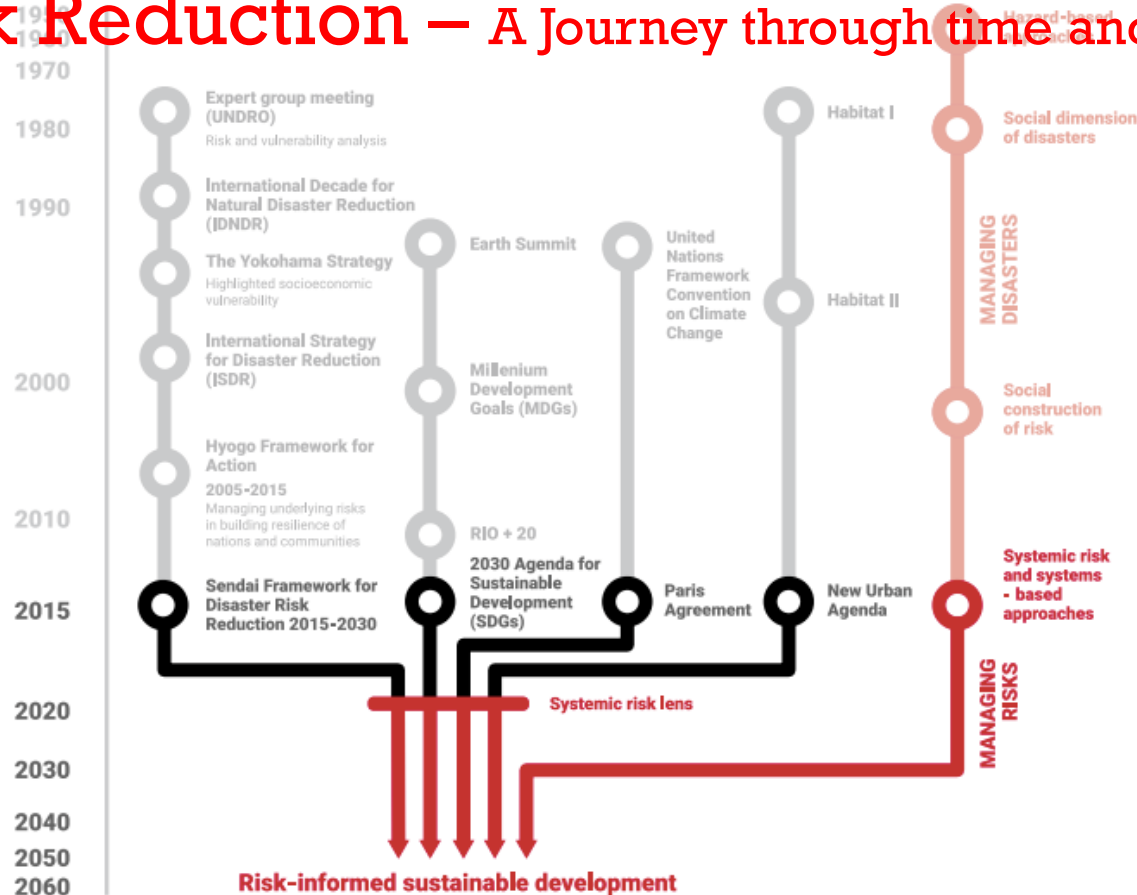


2016 Flash Floods Bima, Indonesia

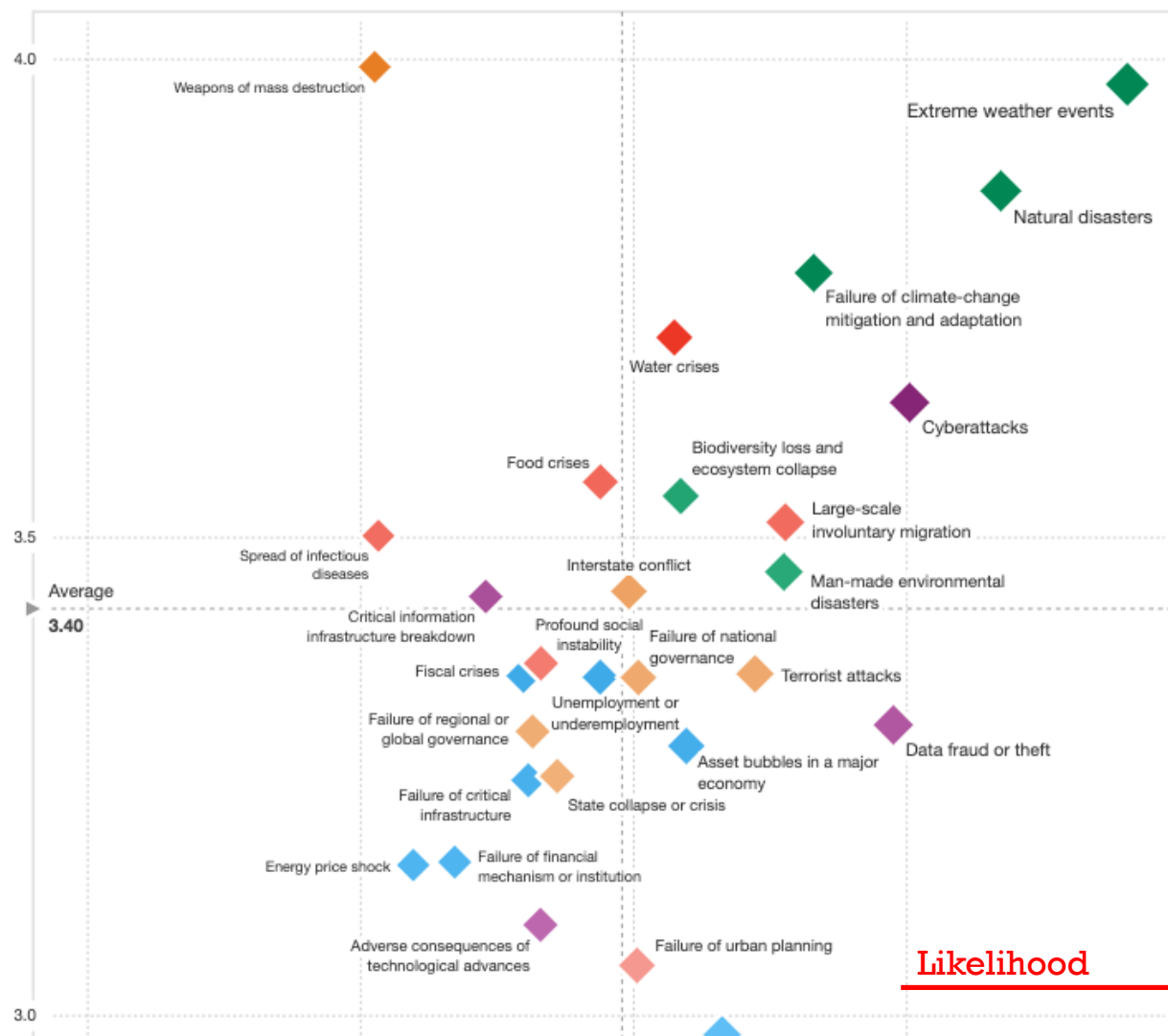
displaced 100,000



Risk Reduction – A Journey through time and space (UNDRR, 2019)



Impact



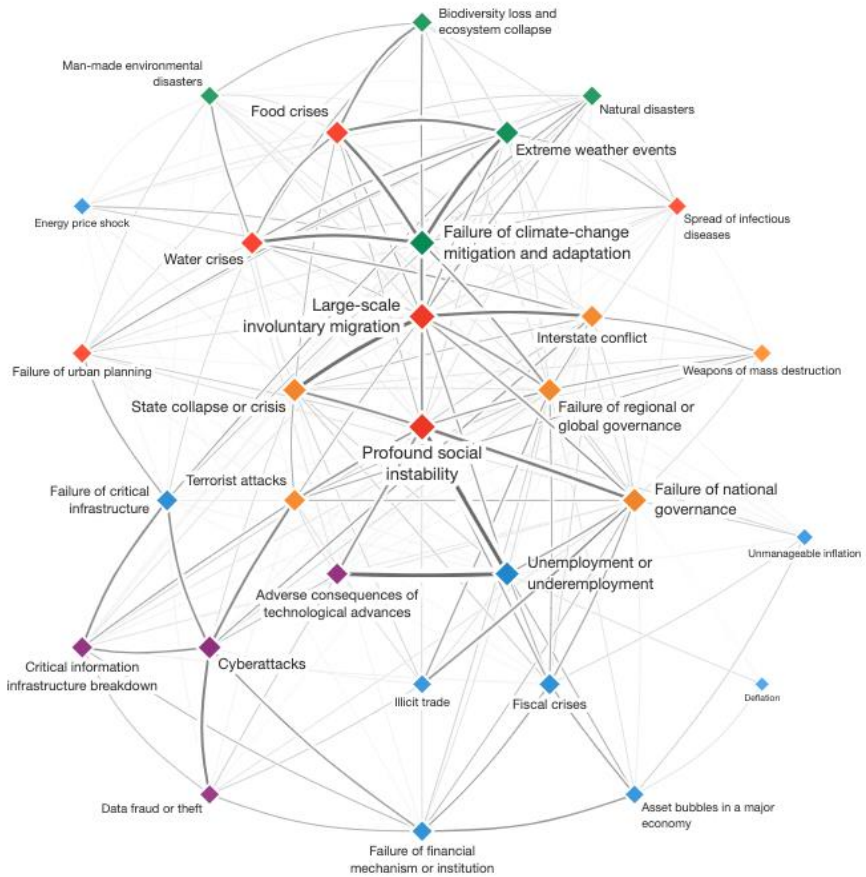
The Global Risk Landscape 2018

(World Economic Forum)

Likelihood

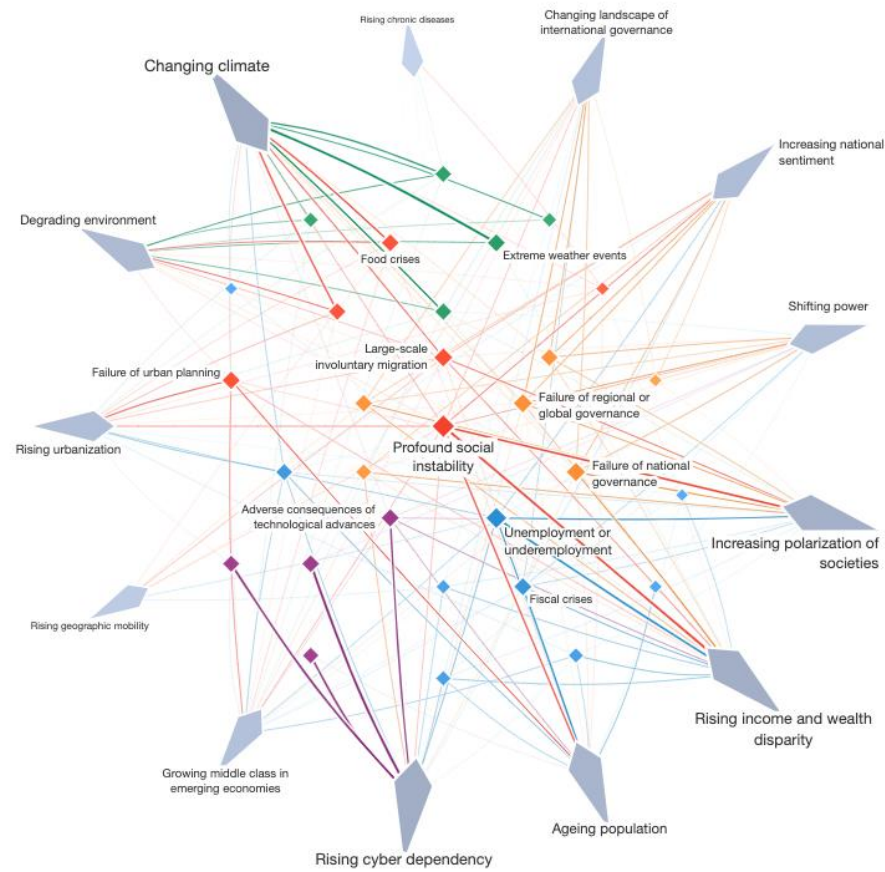
The Global Risks Interconnections Map 2018

How are global risks interconnected?



The Risks-Trends Interconnections Map 2018

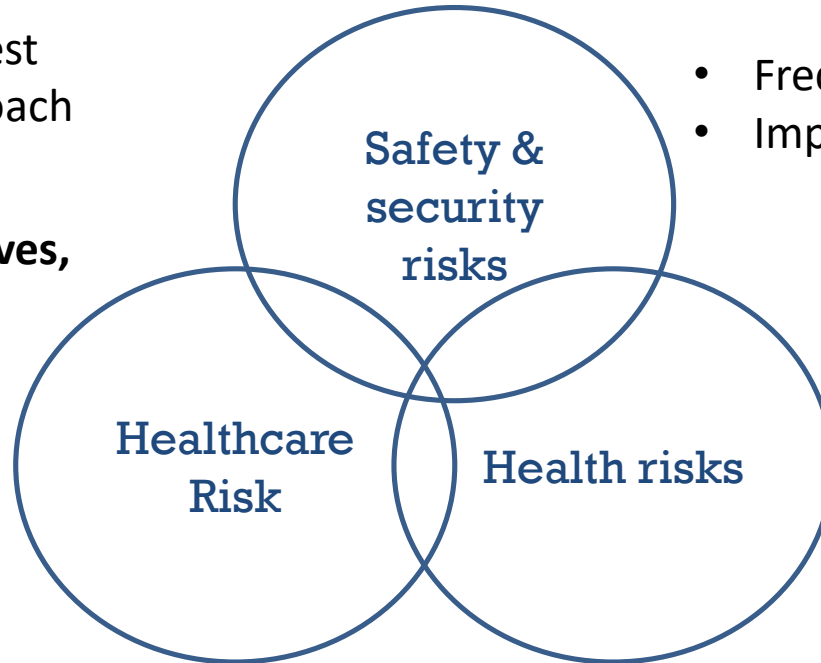
How are global trends connected to global risks?



Logical basis for the discourse with local authorities on tactical and strategical level

- Common interest
- Common approach

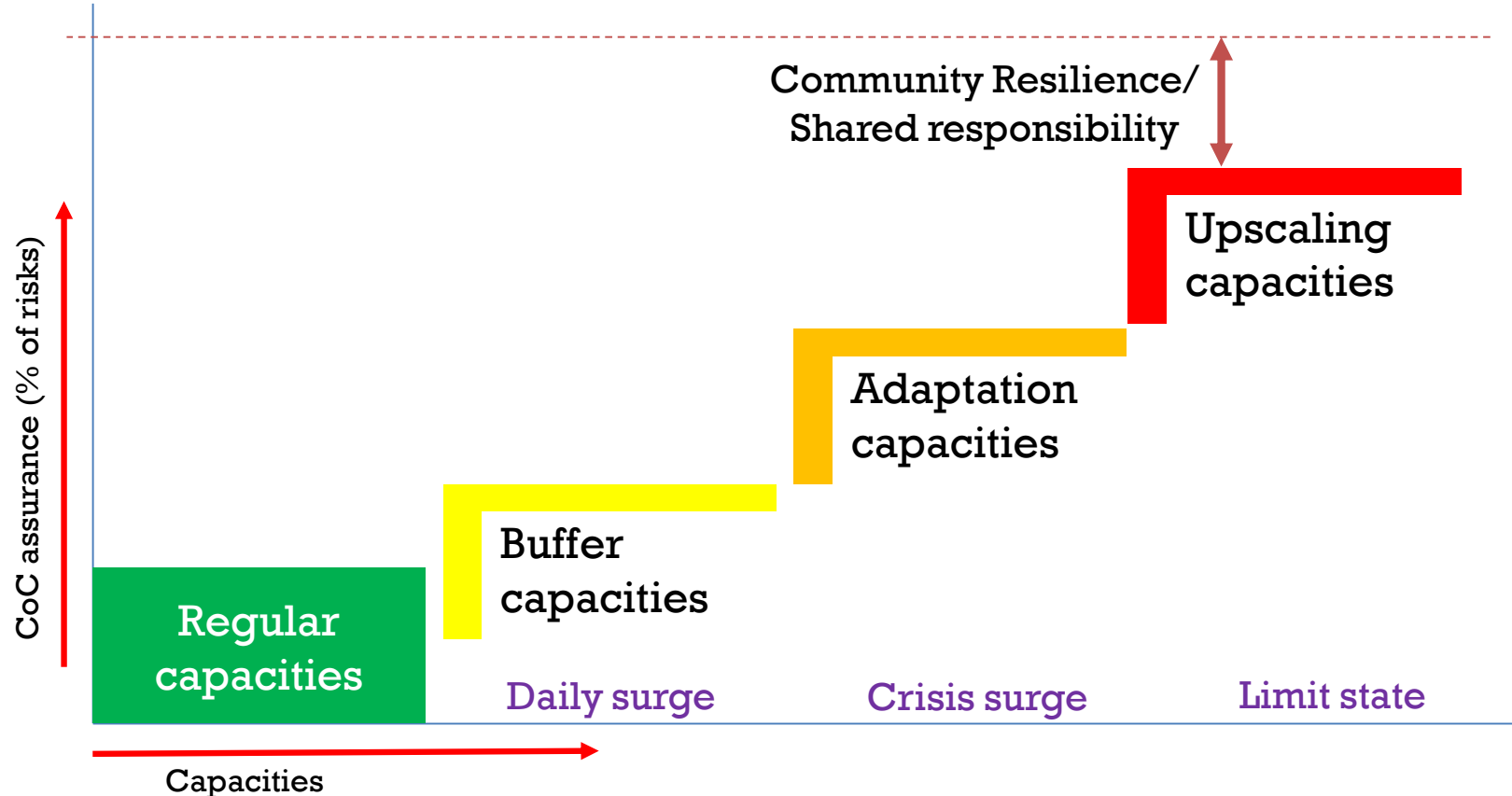
But partly,
Different perspectives,
Different risks
Risk definitions



- Frequency of event
- Impacts on society

- Frequency of event
- Human Impacts

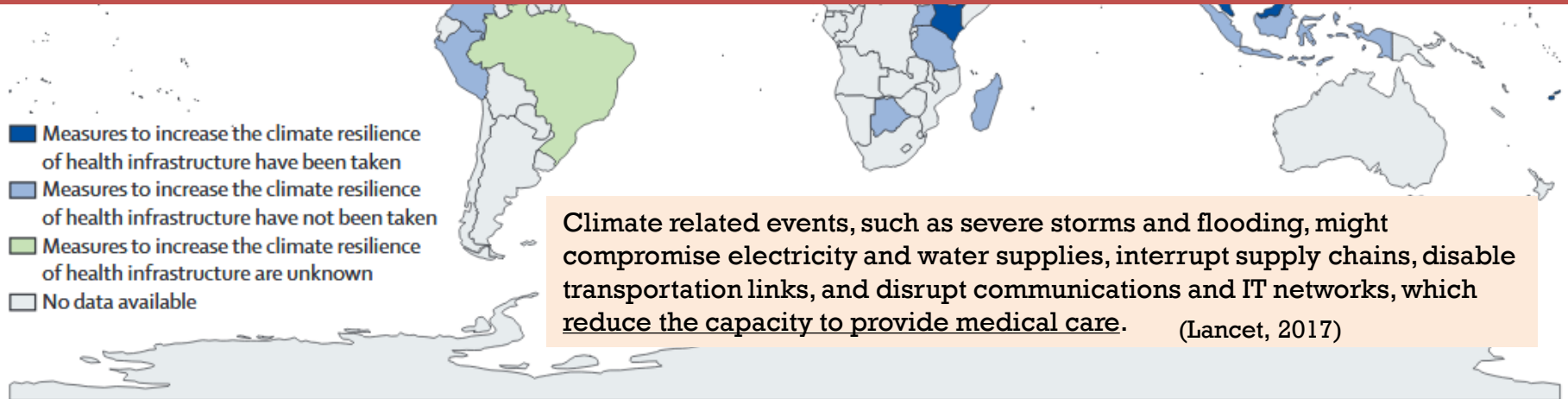
Yardstick of Crisis of Care (expert based scoring)



Health Infrastructures are ill-prepared



*“... adaptation activity is much lower, with only 57% of health systems, 22% of hospitals, and 20% of health centres having **developed a plan** to address future health-care service delivery needs resulting from climate change.”* (Lancet, 2018)



History of the healthy setting (1/2)

Health promotion

“the process of enabling individuals and communities to increase control over the determinants of health and thereby improve their health” (Nutbeam, 1986)

1984 Beyond Health Care

1987 Healthy Cities

1988 Working Group WHO Regional Office for Europe

1989 Vienna WHO-Model Project

1991 Budapest Declaration on

1993 European Pilot Hospital Project

1996 Ljubljana Charter Reframing Health Care

A settings approach to health promotion

“health is created and lived by people within the settings of their everyday life; where they learn, work, play and love” (WHO, 1986)

- Organizational development

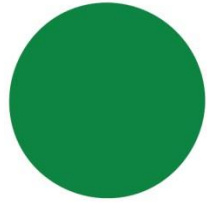
- Community

1. Reshape health care delivery
2. Reorient human resource for health care
3. Strengthen management
4. Learn from experience

(Pre-phase & Phase 1)

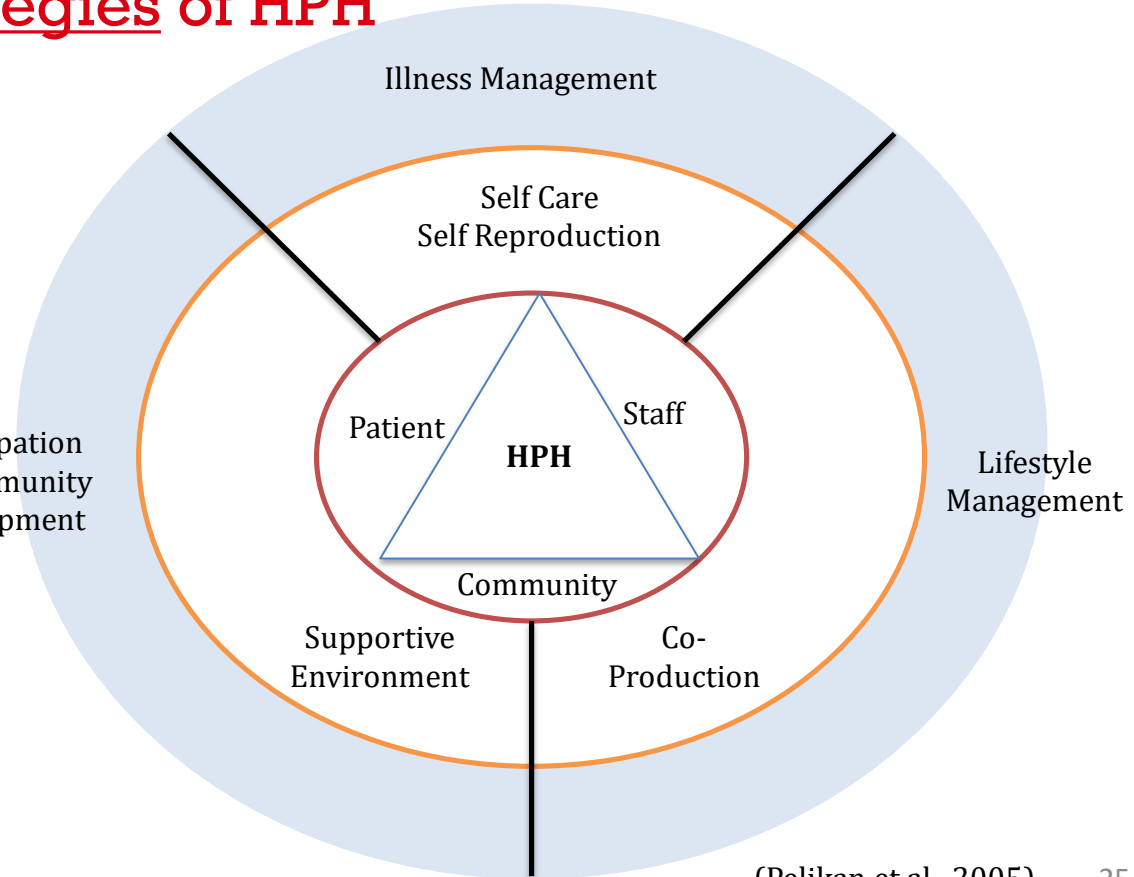
Health Promoting Hospitals Approach

18 Core strategies of HPH



International Network of
Health
Promoting
Hospitals & Health Services

Participation
In Community
Development

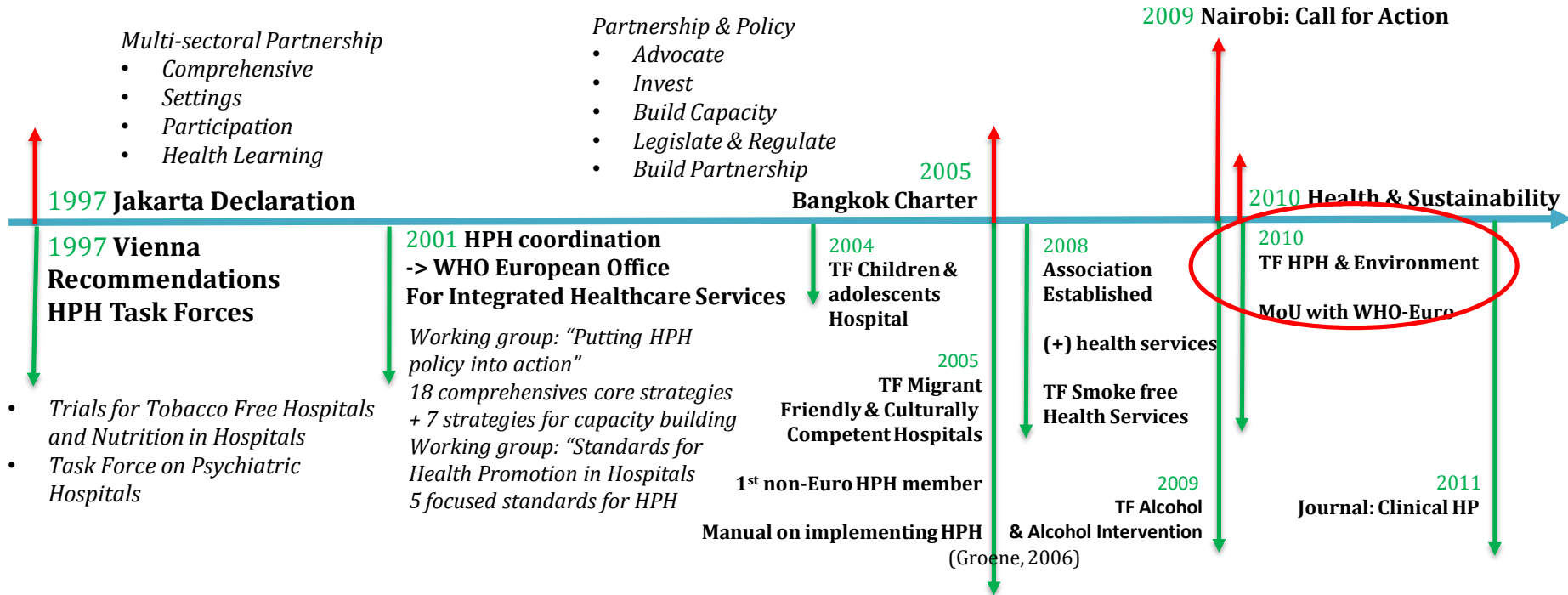


5 standards of HPH

(Gröne u.a., 2005)

1. Management Policy
2. Patient Assessment
3. Patient Information and Intervention
4. Promoting a Healthy Workplace
5. Continuity and Cooperation

History of the healthy setting (2/2)



Health Promoting Hospitals Approach (Phase 3, 4 & 5)

A collection of concise, inspiring and featured applications of the Ten Sustainability Goals by Global Green and Healthy Hospitals Asia Members and other Countries

SUSTAINABILITY IN ACTION

Best Practices from Global Green and Healthy Hospitals Asia Members and other Countries



LEADERSHIP: Prioritize environmental health



CHEMICALS: Substitute harmful chemicals with safer alternatives



WASTE: Reduce, treat and safely dispose of healthcare waste



ENERGY: Implement energy efficiency and clean, renewable energy generation



WATER: Reduce hospital water consumption and supply potable water

Global Green and Healthy Hospitals has its foundation in a comprehensive framework of 10 interconnected goals for the health sector to address and promote greater sustainability and environmental health.



TRANSPORTATION: Improve transportation strategies for patients and staff



FOOD: Purchase and serve sustainably grown, healthy food



PHARMACEUTICALS: Safely manage and dispose of pharmaceuticals

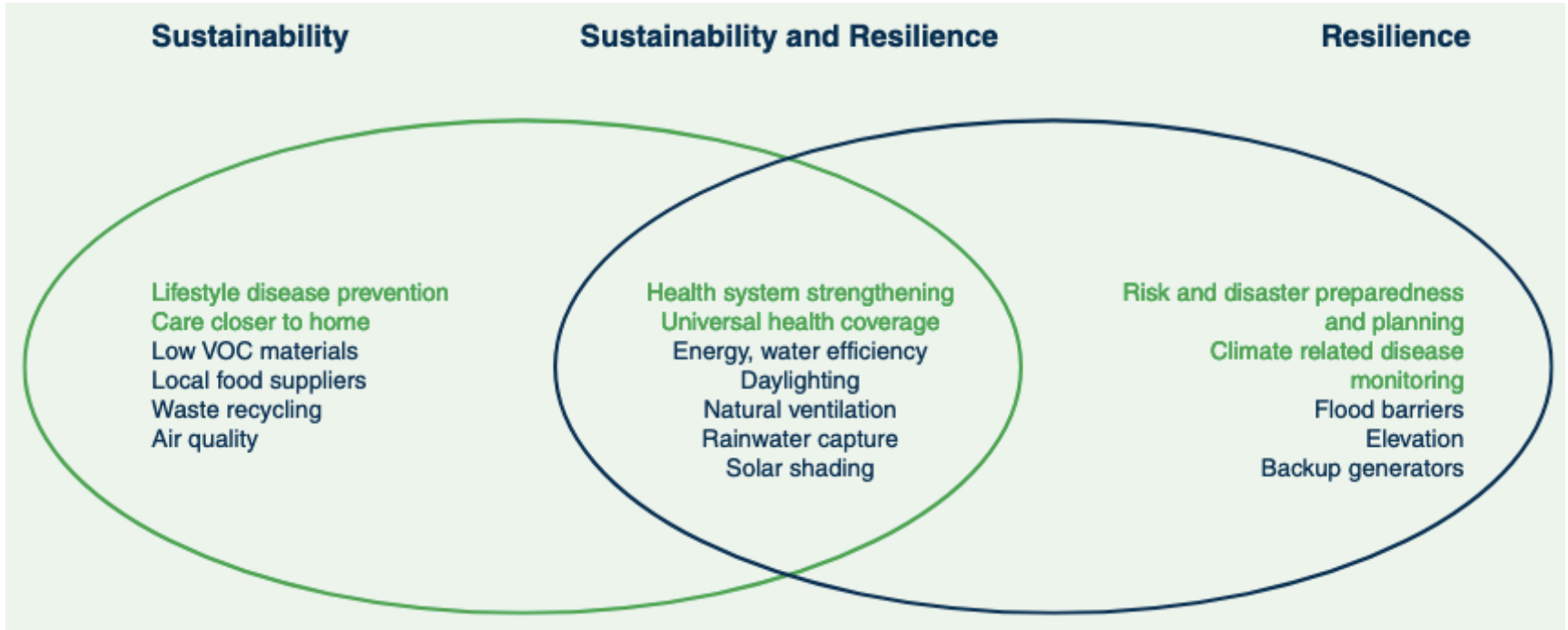


BUILDINGS: Support green and healthy hospital design and construction



PURCHASING: Buy safer and more sustainable products and materials

Climate-smart Healthcare



Source: World Bank, Health Care Without Harm, 2017



174 Low-carbon hospitals HPH standards
Global Green & Healthy Hospitals Agenda
Carbon Disclosure Project (CDP)
Global Reporting Initiative (GRI)
International Standard Organization

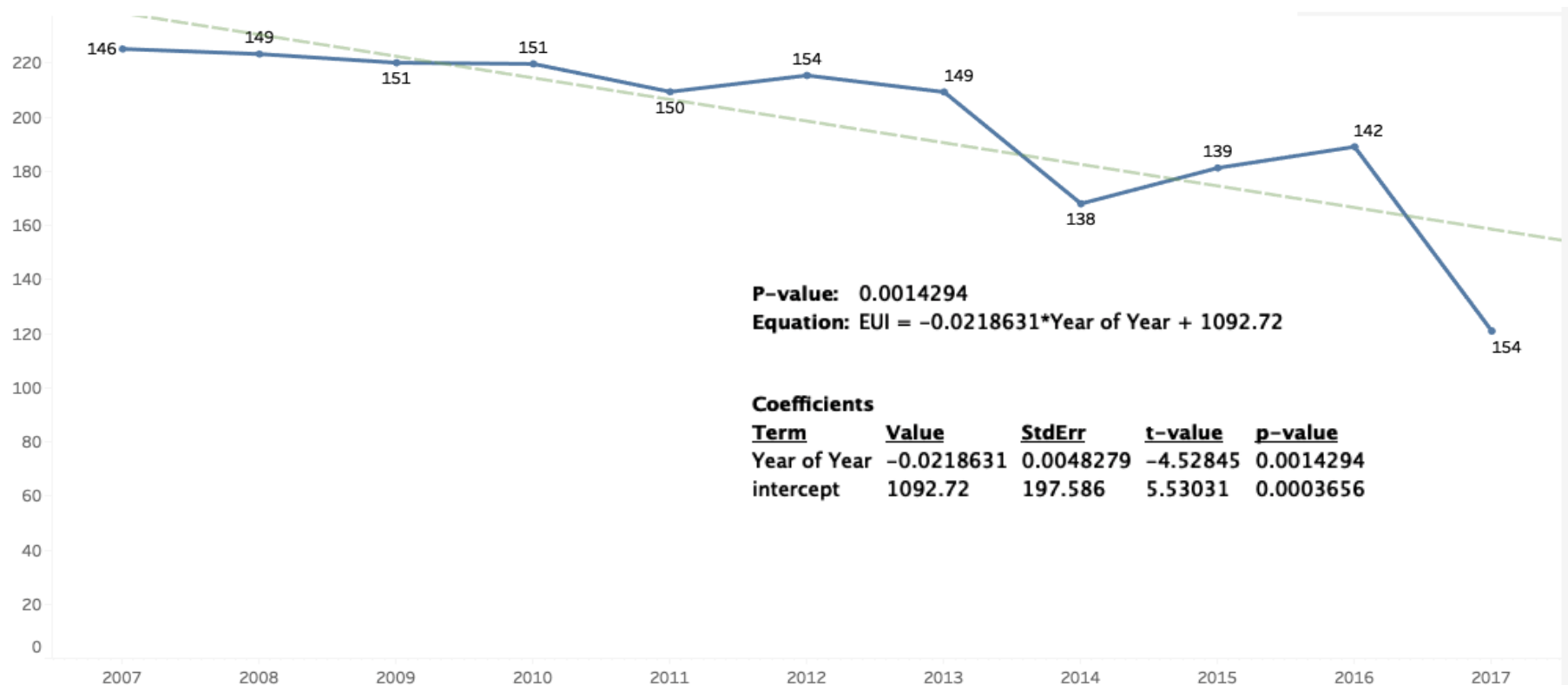
Hospitals

Climate Change Adaptation
+
Health Promotion

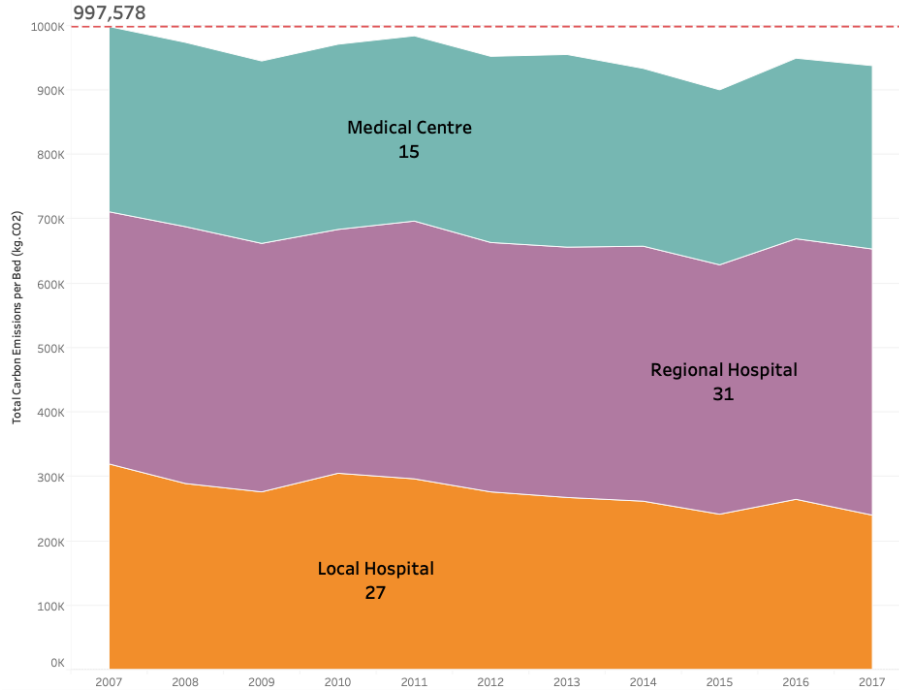
Taiwan Climate-smart Framework
+ **Guidelines**
(Draft: Dec 2018)

3 * Public Forum: Taipei, Taichung & Kaohsiung
4 * Interviews (2*Regional & 2*Medical Centres)

Energy Use Intensity [kWh/(m².yr)]

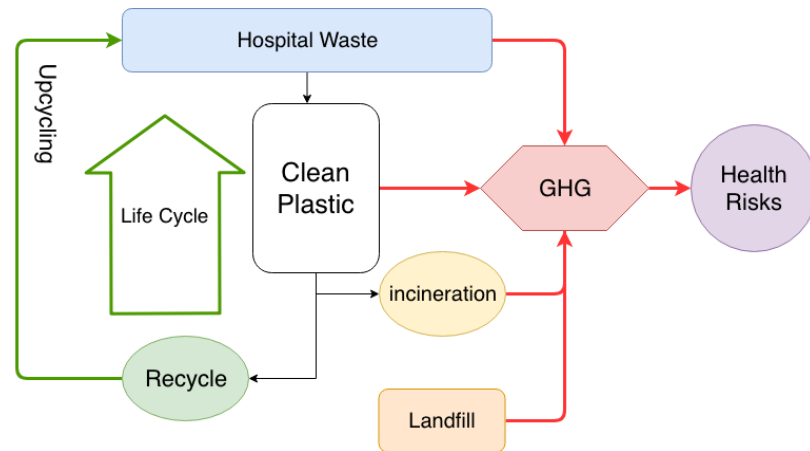


Cohort-72: Total Carbon Emissions per hospital bed (kg.CO₂e)



- Hospital types
- Floor Areas
- Hospital beds
- Electricity
- Water
- Waste
- Fuels (Petroleum, Natural Gas, LPG)

Hospital Type	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Local Hospital	52	53	55	57	57	59	59	57	50	53	52
Regional Hospital	72	74	74	73	71	73	68	61	66	67	67
Medical Centre	22	22	22	21	22	22	22	19	20	21	19



“Plastic Upcycling Solution for Hospitals”.
 23rd IUHPE World Conference on Health Promotion,
 Rotorua, New Zealand. April 7-11, 2019

Contributor:
Ying-Fang Pan

Taichung Tzu Chi Hospital Tzu Chi Medical Foundation
Taichung, Taiwan.





2018-2019



A. Alim *et al.*, 'Comprehensive Safe Hospital Implementation in Rural Area of Indonesia', *Prehospital and Disaster Medicine*, vol. 34, no. s1, pp. s78–s78, May 2019.



Queensland, Australia



NADMA

Agensi Pengurusan Bencana Negara

National Disaster Management Agency



台灣佛教慈濟基金會馬來西亞

TAIWAN BUDDHIST TZU-CHI FOUNDATION MALAYSIA



Expecting the unexpected

METRO NEWS

Sunday, 5 May 2019



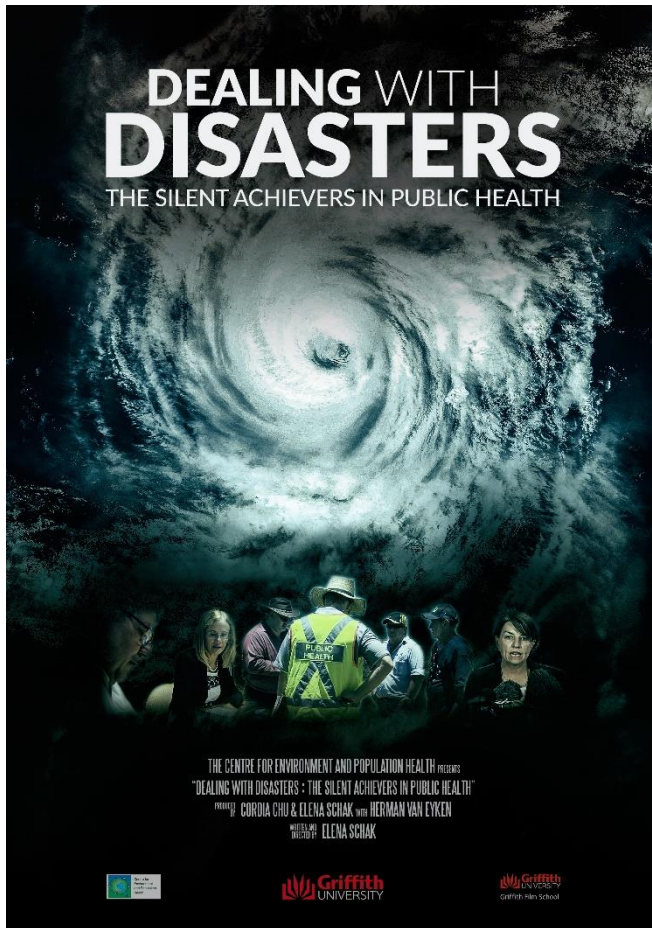
By Rena Lim
Photos By Zhafaran Nasib And
Chan Boon Kai



Wake-up call: The floods that hit Penang in 2017 exposed its lack of flood mitigation and disaster preparedness.

Hospitals are the first place that people go to in the event of a disaster, so it is critical for hospitals and medical personnel to always be prepared for disasters.





In 2010-2011 Queensland, Australia experienced its worst ever cyclones (hurricanes) and floods in an event known as the '**Summer of Sorrow**'. This film looks at the people who worked behind-the-scenes, trying to keep people safe and healthy throughout the events: the people in public health.

<https://www.youtube.com/watch?v=XO54BFaMt1w>



3-Take Away

#1: Despite its mandate to protect and save lives, the healthcare sector is a major source of carbon emissions.

#2: Healthcare is not prepared for climate change.

#3: 'Real' healthcare need to start now.

