Climate change – disruption, risk, and opportunity

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Annual Global Surface Temperature, Relative to Late 19th Century Average

Source: NASA
Temperature by distance above Earth relative to 1861

http://www2.sunysuffolk.edu/mandias/global_warming/greenhouse_gases.html#stratospheric_cooling
CO₂ reconstruction from Lüthi et al. (2008)
Modern CO₂ measurements from NOAA
Temperature trend map from IPCC AR5 WG1 SPM
CO₂ concentrations for RCPs from van Vuuren et al. (2011)
Emissions trajectory graph from Global Carbon Project
Compiled by Kris Karnauskas (@OceansClimateCU)
Projected changes in exposure to heat under a high emissions scenario
The Goldilocks zone

How climate and climate change affect health

• Direct effects
• Impacts mediated by natural systems
• The results of social disruption
• Transition risks
New Zealand’s largest outbreak of water-borne disease preceded by heaviest daily rainfall in more than 10 years

Havelock North – more than 5000 people ill due to *Campylobacter* in the town water supply

4 fold increase in extreme precipitation projected in most parts of NZ by 2050
Which city is finding it more difficult to control dengue?

https://www.startupbootcamp.org/events/fintech-hong-kong-pitch-day-2440/

Losses amount to 2/3 national GDP. Tropical Cyclone Pam – Vanuatu 2015.
Why climate change is so important to financial stability: physical risks, liability risks and, most important, transition risks

Mark Carney, Governor of the Bank of England
An effective response to climate change will require radical changes

$200 a ton of Carbon would impose a cost on the UK National Health Service equivalent to about 20% of its total spend on medicines

http://www.theguardian.com/environment/2013/apr/17/why-cant-we-give-up-fossil-fuels
Community trials of insulation and clean heating – higher temperatures, lower disease rates, lower power consumption

Howden-Chapman et al, 2007
Multiple satisfier?

Health, mobility, efficiency, emission reduction
A carbon tax on food to encourage local plant-based diets could reduce global emissions by as much as a GtCO$_2$e and avoid up to 500,000 deaths per year.
A caution

- Climate agenda and health agenda may align, but they may not
- Co-benefits may spur climate action, or not
Electric cars may be an energy solution; they are not a transport solution; and the health gains are slight
Co-benefits may spur climate action, or they may not

“Southern Ward residents had the cycleway forced on them. I talk about it being done with the delicacy of the Soviet occupation of Berlin after 1945”
Nicola Young. Local resident of Island Bay, Wellington
Action

• Lessons from the history of public health
• Importance of
  – Central direction
  – Local agency
  – Accountability
First-ever consensus Model of environmental diplomacy Solid science basis

But

Non-binding Insufficient
Energy reforms

Low-carbon buildings

Mobility policies

Waste management

Focused acceleration: A strategic approach to climate action in cities to 2030

November 2017
A Zero Carbon Act for New Zealand

Mr Upton's first report as Commissioner contains detailed advice to Parliament on plans for a UK-style Zero Carbon Act and independent Climate Commission.
William Redfern Oration

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