Climate change and healthcare systems: 
A reciprocal relationship 
with risks and opportunities

Willi Haas
Climate Change (CC) and health care systems

Climate Change is being felt today

It combines with socio-economic changes

Reproduction of health is contributing to CC

Health promotion has high potential to yield co-benefits

An active approach creates co-benefits & avoids trade-offs

It requires a paradigm shift

HPH

NEW PARADIGM AHEAD
„The effects of climate change are being felt today, and future projections represent an unacceptably high and potentially catastrophic risk to human health“

Watts et al. 2015, The Lancet Commission

Example heat
Increase in heat events

Heat events occurring every 20 years in 20th century will occur every X years around 2050

Depending on scenarios and their results

- 2 - 4/32 high frequency
- 1 – 10/16 very high frequency/high range
- 0,5/1 – 3/9 very high frequency/low range
Increase in heat events

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Increase in heat events and population aged 65 and above

Heat extremes combine with older people in cities vulnerable to extreme heat.

Excess mortality in Austria

Heat days in 3 periods
2003-2012, 2016-2045 and 2036-65

<table>
<thead>
<tr>
<th>City</th>
<th>2003-2012</th>
<th>2016-2045</th>
<th>2036-2065</th>
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<tr>
<td>Vienna</td>
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<td>Bludenz</td>
<td>4</td>
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</tbody>
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Heat related mortality per annum
Comparison period 2036-65 with 2003-2012

Could double in extreme case incl. other vulnerable groups

The climate-health paradox

What can health professionals do?

- Mitigate and adapt services (greening+)
- Tackling CC could be a health opportunity
Two useful differences re notions

Instead of implicitly using the Pathogenetic paradigm
Emergence, nature, course and therapy of disease

Healthy or sick

Static output concept focus on treating deficits

Source: [http://www.johannes-neubauer.de/uni/saluto/kap_2.html](http://www.johannes-neubauer.de/uni/saluto/kap_2.html); Aaron Antonovsky 1979
Reduction of greenhouse gas emissions (GHG)

Prevention of harm from Climate Change impacts

Disease prevention

Health gain

Dynamic input concept focus on resources

Source: Pelikan and Halbmayer 1999
Health climate co-benefits

Measures

- Active mobility in urban areas

Benefits

- Health gains: Increased physical activity
- Disease prevention: Improved air quality
- Climate mitigation: Substituting car travel
- Adaptation
Active mobility in urban areas: Example Austria

Reduced mortality per 100,000 inhabitants

Saved CO2e (in 1,000 tonnes) vs Reduced number of deaths per 100,000

- **Green mobility**
  - Base line
  - Pollution
  - Exercise

- **Green exercise**
  - Active mobility focus
  - Intensified

- **Zero emissions**
  - Carbon target mid century
  - Remaining motorized traffic with e-motion

- E-mobility lacks health gains from exercise
- A lost HP opportunity

Source: Haas et al. (in progress) - ClimBHealth

All-cause mortality is 1,409 per 100,000 in 2010
Health climate co-benefits

Measures

- Active mobility in urban areas
- Building insulation

Benefits

- Health gains
  - Opportunity: New co-productive neighbourhood relations
- Disease prevention
  - Less heat stress
- Climate mitigation
  - Low carbon cooling/heating
- Adaptation
  - Risk: more energy use for air cons
  - Reduced indoor heat

Health climate co-benefits
Health climate co-benefits

Measures

- Active mobility in urban areas
- Building insulation
- Urban greening

Benefits

- Health gains
- Disease prevention
- Climate mitigation
- Adaptation

Opportunity: New co-productive neighbourhood relations

- Less heat stress
- Less cooling demand
- Improved micro climate
- Health climate co-benefits

Risk: more energy use for air cons
Measures

- Active mobility in urban areas
- Building insulation
- Urban greening
- Recreational zones

Opportunity: promotion of healthier leisure time

Benefits

- Health gains
  - More exercise
- Disease prevention
  - Less heat stress
- Climate mitigation
  - Less travel
  - Carbon sequestration
- Adaptation
  - Risk: more inactive carbon heavy trips
Measures

- Active mobility in urban areas
- Building insulation
- Urban greening
- Recreational zones
- Healthy nutrition

Benefits

- Health gains
- Disease prevention
- Climate mitigation
- Adaptation

Health climate co-benefits
Percentage reductions in relative risk when comparing alternative diets to omnivorous diet

**Risk:** only replacement of beef to reduce carbon footprint; superfoods to become carbon intensive fake health food

**Opportunity:** healthy food has low carbon footprint – requires interdisciplinary collaboration

Source: Tilman and Clark 2014
Health climate co-benefits

Measures

- Active mobility in urban areas
- Building insulation
- Urban greening
- Recreational zones
- Healthy nutrition
- Health promoting hospitals

Benefits

- Health gains
- Disease prevention
- Climate mitigation
- Adaptation

Promotion of health gains

Less CC related Health impacts

Low carbon health care
NHS England 2010
Carbon emissions
100% = 20 Mt CO₂e

- 0.5 kg CO2e/Euro
- Misallocation needs to be avoided
- It matters for the climate, which health intervention dominates

Source: NHS sustainable development unit 2012
Dominating interventions and their carbon intensity
Not based on evidence but on expert guess

Types of health interventions

- Drug Therapy (ICHI 1)
- Medical Surgery (ICHI 1)
- Physician Counselling (ICHI 2)
- Utilizing Co-Benefits (ICHI 3)

International Classification of Health Interventions (ICHI) – 2015 draft
Dominating interventions and their carbon intensity
Not based on evidence but on expert guess

Types of health interventions

- Drug Therapy ICHI 1
- Medical Surgery ICHI 1
- Physician Counselling ICHI 2
- Utilizing Co-Benefits ICHI 3

Spending
Carbon intensity
Types of health interventions

- Drug Therapy (ICHI 1)
- Medical Surgery (ICHI 1)
- Physician Counselling (ICHI 2)
- Utilizing Co-Benefits (ICHI 3)

**High**

**Negative**

Dominating interventions and their carbon intensity
Not based on evidence but on expert guess

HP can be an effective push towards decarbonisation

**Health Promotion Action**
Ottawa Charta 1986

**Develop Personal Skills** (Health literacy)

**Reorient Health Services** (collaboration, co-production)

**Build Healthy Public Policy**

**Create Supportive Environments**

**Strengthen Community Actions**
Health climate co-benefits are a grand opportunity

Measures

- Active mobility in urban areas
- Building insulation
- Urban greening
- Recreational zones
- Healthy nutrition

Benefits

- Health gains
- Disease prevention
- Climate mitigation
- Adaptation

Transformation to low carbon societies is a grand opportunity for re-orienting health services towards health promotion, and a rewarding field for advocating, enabling and mediating.
References

Antonovsky, Aaron, and others. 1979. ‘Health, Stress, and Coping’.


Haas, Willi, Ulli Weisz, Philipp Maier, Karl Steininger, Brigitte Wolkinger, Hans-Peter Hutter, Cem Ekmekcioglu, Michael Kundi, Hanns Moshammer, Peter Wallner, Robert Griebler, Peter Nowak, Jennifer Delcour (in progress). Climate and health co-benefits from changes in urban mobility. How shifts in traffic modes translate into less carbon emissions and better health in three Austrian cities.


International Classification of Health Interventions (ICHI) – 2015 draft.
http://www.who.int/classifications/ichi/en/

Ottawa Charter for Health Promotion, 1986.
http://www.euro.who.int/__data/assets/pdf_file/0004/129532/Ottawa_Charter.pdf?ua=1
Figure 1 | Lifecycle GHG emissions (CO2-Ceq) for 22 different food types. The data are based on an analysis of 555 food production systems: a, per kilocalorie. The mean and s.e.m. are shown for each case. Extended Data Tables 1–3 list data sources, items included in each of the 22 food types and show the mean, s.e.m. and number of data points for each bar, respectively. NA, not applicable.

Source: Tilman and Clark 2014