Addressing Health Adaptation Gaps: Synergies between Sustainable Development Goals

Guéladio Cissé ¹, ²
Head, Ecosystem Health Sciences Unit
Department of Epidemiology and Public Health
¹ Swiss Tropical and Public Health Institute (Swiss TPH)
² University of Basel, Switzerland
Overview

- Insights from the UNEP Adaptation Gap Reports
- UNEP Gap Report 2018: focus on health (Infectious diseases, Heat, Nutrition)
- How to address health adaptation gaps
- Highlights of synergies needed from SDGs
Framework for **Adaptation Gaps**

- Continuation of current level of adaptation effort
- Adaptation achieved
- Societally desirable adaptation
- Technical and physical adaptation limits

Source: UNEP GAR 2014
Adaptation Gap Typology

Adaptation Gap

Appropriate, Effective Practice

Residual Impacts Gap

Knowledge Gap

Implementation Gap

Inappropriate, Ineffective Practice

Source: Peter Berry 2018
Adaptation Gap Over Time

- Appropriate, Effective Practice
- Inappropriate, Ineffective Practice
- Implementation Gap
- Knowledge Gap
- Residual Impacts Gap

Time

Impacts

2030

2050

Source: Peter Berry 2018
Defining Adaptation Gap: a challenge

Estimating the *adaptation gap*: more challenging than calculating the *emissions gap*
- **No** globally agreed **goal or metrics** for adaptation
- Adaptation is a *response to specific climate risks and impacts* often local in nature and variable over time
- Need finding ways of *measuring the adaptation gap* so that **progress** towards reducing it **can be monitored**

Funding  Technology  Knowledge

*Source: UNEP GAR 2014*
Adaptation Funding Gap

Definition

The adaptation funding gap can be defined and measured as the difference between the costs of meeting a given adaptation target and the amount of finance available to do so.

Source: UNEP GAR 2014
Adaptation Technology Gap

Definition

The adaptation technology gap can be defined in terms of perceived gaps by countries, based on available technology needs assessments and requests made to technology support mechanisms.

Source: UNEP GAR 2014
Adaptation **Knowledge Gap**

**Definition**

Knowledge gaps can be framed in the context of bridging either the generic adaptation gap or a specific adaptation gap. While they are difficult to quantify, it is possible to set specific and measurable targets for addressing them.

*Source: UNEP GAR 2014*
Adaptation gap in health

The **difference between** the climate-related health outcomes under **actual adaptation efforts** and the climate-related health outcomes that would occur under **desirable levels of health adaptation efforts**, consistent with a societally set goal for adaptation.

*Source: UNEP GAR 2018*
Adaptation GAR 2018: Focus on Health

Chap 6- Heat & EEs

Chap 7- Inf. Disease

Chap 8- Nutrition

- Baseline situation: a **significant**, largely preventable, **current burden** of climate-related illness and mortality

- Projections

- Addressing gaps
Heat and Extreme Events

Current impacts already threaten health of vulnerable populations in many regions.

Projected increases in heat and extreme weather events and changing socio-demographic trends will further increase exposure and risks.
Disasters, many of which are exacerbated by climate change and which are increasing in frequency and intensity, significantly impede progress towards sustainable development.
Heat and Extreme Events

Vulnerable Groups

- The **elderly** from dysfunctional thermoregulatory mechanisms, chronic dehydration, medication and pre-existing diseases
- **Pregnant women and foetuses**; extreme heat is a risk factor for adverse birth outcomes such as low birth weight and premature birth
- Patients with **chronic diseases**; for example, people with diabetes, who are obese and those with cognitive impairments
- **Outdoor seasonal workers**

- **Travellers** Socially disadvantaged or isolated groups

- **Migrants, refugees and internally displaced people**
Infectious diseases

Infectious diseases: #20 percent of the global burden of disease (Murray et al., 2012).

Three important categories of infectious diseases sensitive to climate change:
(i) water-borne diseases (WBDs);
(ii) food-borne diseases (FBDs); and
(iii) vector-borne diseases (VBDs)

Adaptation gap associated with infectious diseases, focus on WFDs and VBDs.
Infectious diseases

Current burdens and projections for WFBDs and VBDs

<table>
<thead>
<tr>
<th>Exposure/outcome</th>
<th>Current impacts</th>
<th>Projected impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water- and food-borne disease</td>
<td>In 2016, diarrhea caused around 1.7 million deaths, including almost 450,000 in children younger than five years (Troeger et al., 2017).</td>
<td>Global projections (WHO, 2014); 48,000 additional deaths per year in children aged under 15 years are projected due to diarrheal disease for the year 2030 and 33,000 deaths for 2050.</td>
</tr>
<tr>
<td></td>
<td>600 million food-borne illnesses and 420,000 associated deaths in 2010 (WHO, 2015b).</td>
<td>In Europe in the 2080s, climate change could induce an additional 40,000 cases of salmonella annually (Watkins et al., 2009).</td>
</tr>
<tr>
<td></td>
<td>In Europe, the most prevalent water- and food-borne disease is campylobacteriosis, which is highly sensitive to climate (ECDC, 2012).</td>
<td></td>
</tr>
</tbody>
</table>

Vector-borne diseases

Estimated or reported annual cases of selected vector-borne diseases (WHO, 2017c):
- Malaria: 212 million.
- Schistosomiasis: 207 million.
- Dengue: 96 million.
- Lymphatic filariasis: 38.5 million.
- Onchocerciasis: 15.5 million.

- Global projections (WHO, 2014): 60,000 additional deaths per year from malaria for the year 2030 and 33,000 deaths for 2050.
- Climate change will continue to increase the risk of tick-borne diseases (Stone et al., 2017).
## Infectious diseases

### Projections for food and water-borne diseases (2)

### ADDITIONAL DEATHS DUE TO DIARRHEAL DISEASE

in children aged less than 15 years by region

<table>
<thead>
<tr>
<th>Region</th>
<th>2008</th>
<th>2030 Without Climate change</th>
<th>2030 With Climate change</th>
<th>2050 Without Climate change</th>
<th>2050 With Climate change</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASIA</td>
<td>554,453</td>
<td>+170,870 +30%</td>
<td>+186,833 +33%</td>
<td>+59,227 +10%</td>
<td>+67,426 +12%</td>
</tr>
<tr>
<td>AUSTRALASIA AND OCEANIA</td>
<td>747</td>
<td>+368</td>
<td>+390</td>
<td>+175</td>
<td>+190</td>
</tr>
<tr>
<td>EUROPE</td>
<td>454</td>
<td>+56</td>
<td>+62</td>
<td>+18</td>
<td>+20</td>
</tr>
<tr>
<td>LATIN AMERICA (incl. Caribbean’s)</td>
<td>20,065</td>
<td>+3,612 +18%</td>
<td>+3,862 +19%</td>
<td>+581</td>
<td>+642</td>
</tr>
<tr>
<td>NORTH AMERICA</td>
<td>38</td>
<td>+17</td>
<td>+18</td>
<td>+10</td>
<td>+11</td>
</tr>
<tr>
<td>AFRICA</td>
<td>774,299</td>
<td>+435,715 +56%</td>
<td>+467,587 +60%</td>
<td>+223,532 +29%</td>
<td>+248,209 +32%</td>
</tr>
<tr>
<td>World</td>
<td>1,350,056</td>
<td>+610,638</td>
<td>+658,752</td>
<td>+283,543</td>
<td>+316,498</td>
</tr>
</tbody>
</table>

**Difference:**
- 2008: 0
- 2030: +48,114
- 2050: +32,955

WHO, 2014
Infectious diseases

Current burden of vector-borne diseases (2)

Table 7.2: Global burden of major VBD, as of March 2017

<table>
<thead>
<tr>
<th>Vector*</th>
<th>Disease</th>
<th>Estimated** or reported annual number of cases</th>
<th>Estimated annual number of deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mosquitos</td>
<td>Malaria</td>
<td>212,000,000</td>
<td>429,000</td>
</tr>
<tr>
<td></td>
<td>Dengue</td>
<td>96,000,000</td>
<td>9,110</td>
</tr>
<tr>
<td></td>
<td>Lymphatic filariasis</td>
<td>38,464,000</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td>Chikungunya</td>
<td>693,000 (suspected, 2015)</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td>Zika virus disease</td>
<td>500,000 (suspected, 2016)</td>
<td>NA</td>
</tr>
<tr>
<td>Blackflies</td>
<td>Onchocerciasis</td>
<td>15,531,500</td>
<td>NA</td>
</tr>
<tr>
<td>Sandflies</td>
<td>Muco/cutaneous</td>
<td>3,895,000</td>
<td>NA</td>
</tr>
<tr>
<td></td>
<td>Visceral</td>
<td>60,800</td>
<td>62,500</td>
</tr>
<tr>
<td>Triatomine bugs</td>
<td>Chagas disease</td>
<td>6,653,000</td>
<td>10,600</td>
</tr>
<tr>
<td>Ticks</td>
<td>Borreliosis (Lyme disease)</td>
<td>532,125</td>
<td>NA</td>
</tr>
<tr>
<td>Snails</td>
<td>Schistosomiasis</td>
<td>207,000,000</td>
<td>200,000</td>
</tr>
</tbody>
</table>

*Only the VBDs with the largest burdens are included. **Central estimate. Source: (WHO, 2017a).
Infectious diseases

Projections for vector-borne diseases

Most models project an increased risk for VBD transmission at high latitudes during the next century (Tjaden et al., 2017).

Table 7.3: Estimated number of additional deaths due to malaria and dengue by region, for 2030 and 2050* and number of deaths estimated for 2016

<table>
<thead>
<tr>
<th>Region</th>
<th>Estimated deaths in 2016</th>
<th>2030</th>
<th>2050</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Malaria</td>
<td>Dengue</td>
<td>Malaria</td>
</tr>
<tr>
<td>Asia</td>
<td>75,615</td>
<td>35,014</td>
<td>+2,425</td>
</tr>
<tr>
<td>Australasia and Oceania</td>
<td>912</td>
<td>7</td>
<td>44</td>
</tr>
<tr>
<td>Europe</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Latin America (incl. Caribbean)</td>
<td>259</td>
<td>2,463</td>
<td>+163</td>
</tr>
<tr>
<td>North America</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Africa</td>
<td>643,582</td>
<td>287</td>
<td>+57,459</td>
</tr>
<tr>
<td>World</td>
<td>720,368</td>
<td>37,774</td>
<td>60,091</td>
</tr>
</tbody>
</table>

Infectious diseases

Address both implementation gaps and knowledge gaps

- Increase access to WASH
- Invest more in health research in areas that are most affected by WBD and FBD
- More efforts for reducing the population of parasites, microbes and vectors
- Improve integrated vector management
- Reduce human exposure
- Reduce the burden of diseases
- Make progress towards SDGs.
Food and Nutritional Security
Unequal exposures and impacts

• Majority of the world’s hungry people live in developing countries, where 12.9 per cent of the population is undernourished.

• Poor nutrition causes nearly half (45 per cent) of deaths in children under five – 3.1 million children each year.

• Asia and Africa represent nearly all of the current stunting burden.

• South Asia represents more than half of those wasted.

• Missed target: reduce the number of stunted children by 40% as compared with 2012 by 2025.
Food and Nutritional Security

Climate change will make it worse…

- **Mortality**
  - 95’176 additional undernourishment related deaths in children under five by 2030 and 84’697 by 2050.

- **Undernourished**
  - 530-550 million undernourished by 2050 @ 1.5° C
  - 540-590 million undernourished by 2050 @ 2°C

- **Stunting**
  - 570’000 (under prosperity/low climate change scenario)
  - >1 million (under the poverty/high climate change scenario)
  - 7.5 million moderately and severely stunted (2030) and 10.1 m (2050) under base-case socio-economic scenario.
Food and Nutritional Security

CC sensitive Nutritional Monitoring and Early Warning System

Multi-level governance: resources, sectors, and actors
Need Climate Resilient Health Systems

• The overall presence of health-sector activities in international climate adaptation finance stands at **less than one percent**.

• Additional resources are needed to build the capacities of health professionals to deal with climate-related impacts.
• Accelerated action on basic climate-sensitive determinants of health within SDGs (WASH, evidence-based interventions to avoid malnutrition, etc.)
• Early warning, monitoring and DRR (including building evidence base and improving data coverage)
HEALTH IN THE SDG ERA

GOD HEALTH AND WELL-BEING

ENSURE HEALTHY LIVES AND PROMOTE WELL-BEING FOR ALL AT ALL AGES
Increase Synergies from SDGs

- Two policy-related clusters are highlighted: Water Supply and Sanitation and Health and Healthcare of Indigenous Peoples.

- Water Supply and Sanitation: a central concern linking Environment and Health

- NEED FOR SUSTAINED ACTION

Nakamura et al. 2019 Web of Sc. Group
Increase Synergies from SDGs

- Africa, the Arab States, and Latin America are, by contrast, small participants despite the fact that SDGs are key concerns in these regions.

- **European nations dominate** SDGs research, with North America and the Asia & Pacific region contributing less, but roughly similar.
EEA Report No 1/2018
National climate change vulnerability and risk assessments in Europe, 2018

Source: EEA Report 2018
Switzerland

Timelines of CCIV information and adaptation policy developments for Switzerland

Source: EEA Report 2018
Countries to do more for NAPs & SDGs

We need:

• More of them
• Better ones, in some cases
• For the existing ones to be implemented

The Lancet 2018 391, 581-630 DOI: (10.1016/S0140-6736(17)32464-9)
Thank you very much for your attention

gueladio.cisse@swisstph.ch