CLIMATE CHANGE AND HUMAN HEALTH:
A VULNERABILITY/RESILIENCE FRAMEWORK APPROACH

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Introduction

The presentation will draw on the literature on the health impacts of climate change, and will re-position the arguments in a vulnerability/resilience framework. It will be argued that many communities are located in territories that are predisposed and inherently prone to being negatively affected by global warming in terms of health. This will be the vulnerability side of the argument. The resilience side of the argument will relate to what can be done, policy-wise, to strengthen the ability of communities to cope with or withstand health problems and survive, recover from, and even possibly improve their health condition, in the face of global warming.

Climate Change and Human Health

Climate change impacts the health of human communities directly, mostly due to changes in temperature and precipitation, and indirectly, mostly by crop failures and shifting patterns of disease vectors (Smith et al., 2014). Other factors associated with the effect of climate change on human health include heat waves, floods, droughts and fires.

These impacts on human health will exacerbate health problems that already exist in vulnerable communities, but may also spread into other areas that experience higher temperatures and precipitation changes.

Definitions utilised in the Presentation

We would like to emphasise that the terms Vulnerability and Resilience in this presentation are not used in same sense used in Biology, but in a policy-making context.

In brief, we are proposing that vulnerability should relate to a predisposition of a community to be harmed by climate change and resilience to policy responses which enable (or otherwise) a community to withstand or cope with these effects.

By and large, these definitions are in line with those adopted by the IPCC WGII (Agard et al., 2014)

Vulnerability to Climate Change

Vulnerability (etymologically derived from *vulnerare* – to harm in Latin) is used in this presentation to refer to the propensity or predisposition of a community that render it susceptible to harm from the negative effects of climate. Such predisposition is likely to be permanent or quasi permanent.

The effects on health, which were identified in Smith et al. (2014) include:

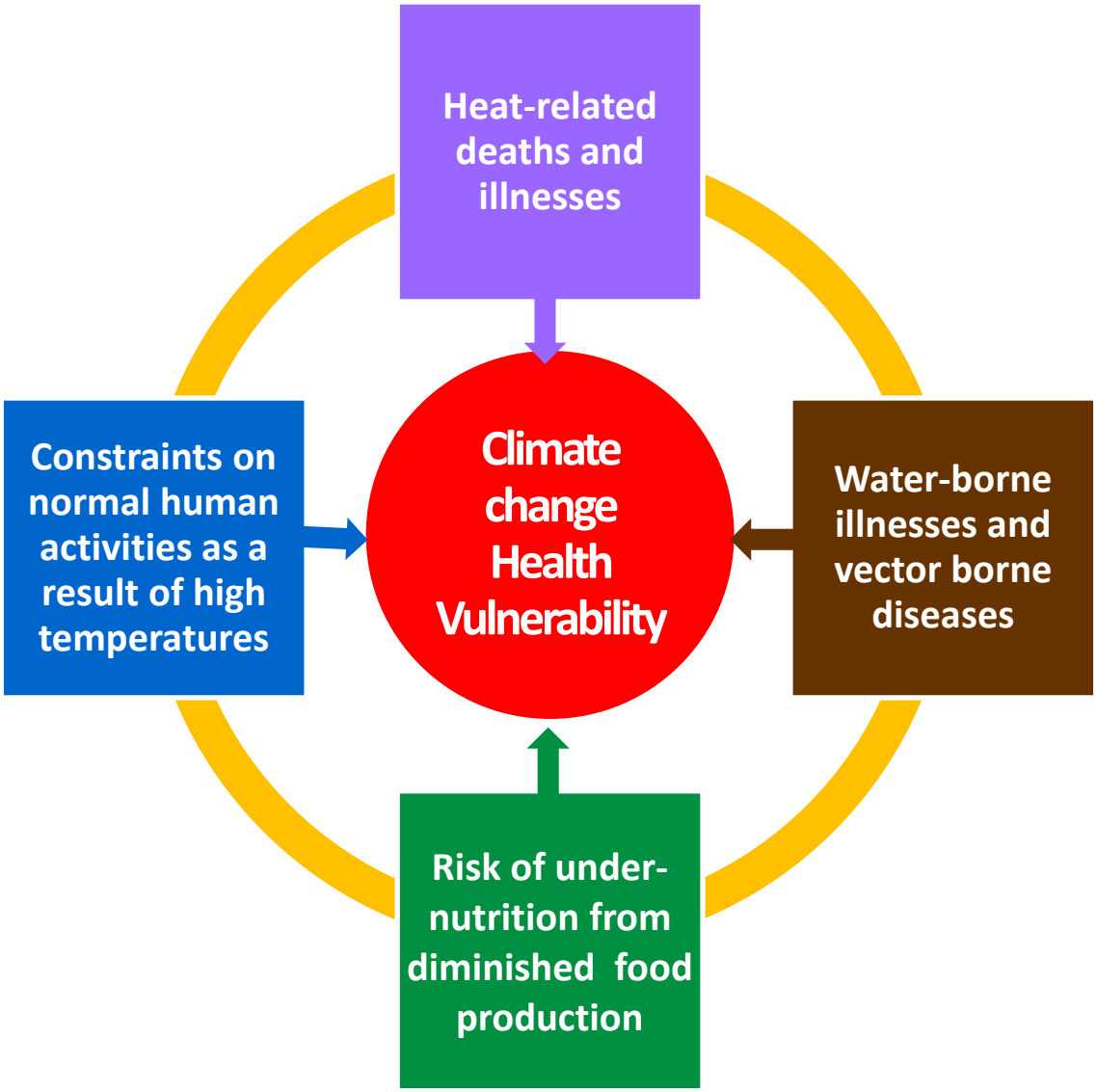
- heat-related death and illness;
- water-borne illnesses and disease vectors;
- increased risk of undernutrition resulting from diminished food production in poor regions;
- Constraints on normal human activities by the combination of high temperatures and high humidity.

Vulnerability to Climate Change

These conditions are often inherent in the affected communities in the sense that they depend on the location of the community and the natural features of that location. This especially applies to communities currently predisposed to such harm.

This also applies to communities that are not currently predisposed to such harm but would be with continued global warming. Thus for example, a community living in a territory not far from the tropics which is currently not affected by certain disease vectors such as mosquitoes, may, as a result of higher temperatures, become affected in the future.

Health Vulnerability: Major Impacts



Resilience

Resilience, etymologically, means to rise again (*resalire* in Latin) is used in this presentation to refer to the ability of a community to withstand the effects of harm associated with vulnerability to climate change, through appropriate policy responses. According to Smith et al. such responses include:

- Policies aimed at improving public health including the provision of clean water and sanitation;
- Child care measures including vaccination;
- Disaster preparedness and response and early warning systems;
- Measures that alleviate poverty in general.

Risk of being harmed by Climate Change

The vulnerability/resilience framework developed by Briguglio et al. (2006) can be applied to the risk of being harmed by climate change.

- **Increased risk (vulnerability):** This is associated with inherent conditions that expose the community to negative health impacts associated with climate change.

- **Reduced risk (resilience):** This is associated with policy-induced measures leading enabling the community to withstand or cope with the negative affects of climate change.

Juxtaposing Vulnerability and Resilience

Risk =

Risk of being harmed by Climate Change

Vulnerability

(adds to risk)

EXPOSURE:
Features of a community rendering it exposed to the harm of climate change

Predispositions:
- Heat-related death and illness;
- Water-borne illnesses and disease vectors;
- Increased risk of undernutrition resulting from diminished food production;
- Constraints on normal human activities by high temperatures.

- Resilience

(reduces risk)

COPING ABILITY:
Policy-induced measures that enable a community to withstand the harm of climate change

Policy Responses:
- Improvements in public health including clean water &sanitation;
- Child care measures including vaccination;
- Disaster preparedness and early warning systems;
- Measures that alleviate poverty

Four Community Scenarios

WORST CASE

High vulnerability & Low resilience

Includes communities which are highly exposed to the harm of climate change and do not adopt suitable polices

High vulnerability & High resilience

Includes communities which are highly exposed to the harm of climate change but adopt suitable polices

Low vulnerability & Low resilience scores

Includes communities which are not highly exposed to the harm of climate change and do not adopt suitable polices

BEST CASE

Low vulnerability & High resilience scores

Includes communities which are not highly exposed to the harm of climate change and also adopt suitable polices

Vulnerability

Resilience

Some Examples

The situation of a community which is already exposed to vector borne diseases and does not adopt appropriate measures to withstand the resulting risk to health, would be exacerbated by climate change.

Likewise, a community that is not currently experiencing high temperatures or extreme weather events, but does not put in place appropriate policy responses, would render such a community highly at risk to vector borne diseases when the temperature rises or when extreme weather events occur.

Policy Implications…1

The main policy implication of the framework is that vulnerable communities can adopt policies that enable them to cope with and withstand the negative effects of climate change.

The framework suggests that a community must first identify why they are predisposed or inherently prone to being harmed, health-wise, as a result of climate change, so that the policy responses could be targeted at such risks, rendering them more efficient and effective.

The framework also suggest that climate change policies should not be a one-size fits all, as different communities my be harmed by climate change differently.

Policy Implications…2

Climate change is associated with uncertainty and therefore a community at risk, and even those that are not currently at risk, should adopt resilience building measures proactively, based on no regret or low–regret basis, particularly when there are co-benefits associate with such measures.

A consideration associated with this framework is that the harmful effects of climate change can be catastrophic and a given downside is not counter-balanced by an equal upside. Even if the chance of climate change are just 5% in favour and 95% against (the IPCC projections carry a much higher probability), it is still important to adopt resilience-building measures. By way of an analogy, if an architect tells us that there is a 5% chance that the roofs of our house will collapse, we do not argue that there are 95% chance that they will not. We either move out or repair the building.

References

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End of Presentation

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