

Peter Hefe*^{*}

Climate change: challenges for public health systems

Klimawandel: Herausforderungen für Gesundheitssysteme

<https://doi.org/10.1515/pubhef-2019-0114>

Abstract: The effects of climate change can already be felt today. It greatly affects individual health and public health systems. Accordingly, it is important not only to reduce greenhouse gases, but also to prepare for the weather and climate change-related consequences, and adapt to them. National and global health institutions have only recently started to analyze and enhance climate resilience through public health policy.

Keywords: climate change; climate resilience; global warming; public health.

Zusammenfassung: Die Auswirkungen des Klimawandels sind bereits heute spürbar. Er hat erhebliche Auswirkungen auf die individuelle Gesundheit und die öffentlichen Gesundheitssysteme. Daher ist es wichtig, nicht nur die Treibhausgase zu reduzieren, sondern sich auch auf die wetter- und klimabedingten Folgen vorzubereiten und sich an sie anzupassen. Nationale und globale Gesundheitsinstitutionen haben erst kürzlich damit begonnen, die Klimabeständigkeit Resilienz durch die Gesundheitspolitik zu analysieren und zu verbessern.

Schlüsselwörter: Globale Erwärmung; Klimaresilienz; Klimawandel; Öffentliche Gesundheit.

Linking climate change and public health

The relationships between climate change, changes in ecosystems, and their direct and indirect effects on public health are by no means clear. Whether a change in climate conditions results in for example an increased incidence

of a particular disease is usually a very complex question [1]. Even a minimal rise in average global temperatures can have significant – although regionally disparate – effects on conditions of temperature and humidity – setting off an entire cascade of changes to ecosystems and societies, including their health care system. This complexity makes it difficult to produce reliable forecasts concerning the respective effects, or to mobilize politicians and society in favor of preventative measures.

Figure 1 attempts to depict the complex inter-relationships between the drivers of climate change, the consequences of that change, and the ensuing health effects on humans.

Increasing adaptation and resilience of public health systems

Nevertheless climate change effects substantially contribute to a “stress syndrome”, which affects health systems all over the world [3]. The effects of summerly heat records in Europe, such as in 2018 [4, 5], gave a first impression on what changing weather pattern will mean in regard to individual health status and collective systems of public health. Next to *direct* impacts, there are plenty of *indirect* weather- and climate change-related consequences, such as increasing cases of tropical diseases, spread of (new) disease vectors and effects of (forced) global migration. In 2018, the World Health Organization (WHO) forecast 250,000 additional direct deaths per year due to climate change, for the period between 2030 and 2050, as a result of these stress syndromes [2]. If indirect consequences are considered, the numbers may well be much higher. The task of better adapting to the emerging risks to human health has to be considered as an important contribution to the broad field of *climate change adaptation*. Organizational and financial structures of government and private health systems must be restructured to increase their resilience in the face of a foreseeable increase in strain. However, this challenge cannot be left to the health

^{*}**Correspondence:** Dr. Peter Hefe, Director Asia and Pacific, Konrad-Adenauer-Stiftung, Klingelshöferstraße 23, 10785 Berlin, E-mail: peter.hefele@kas.de

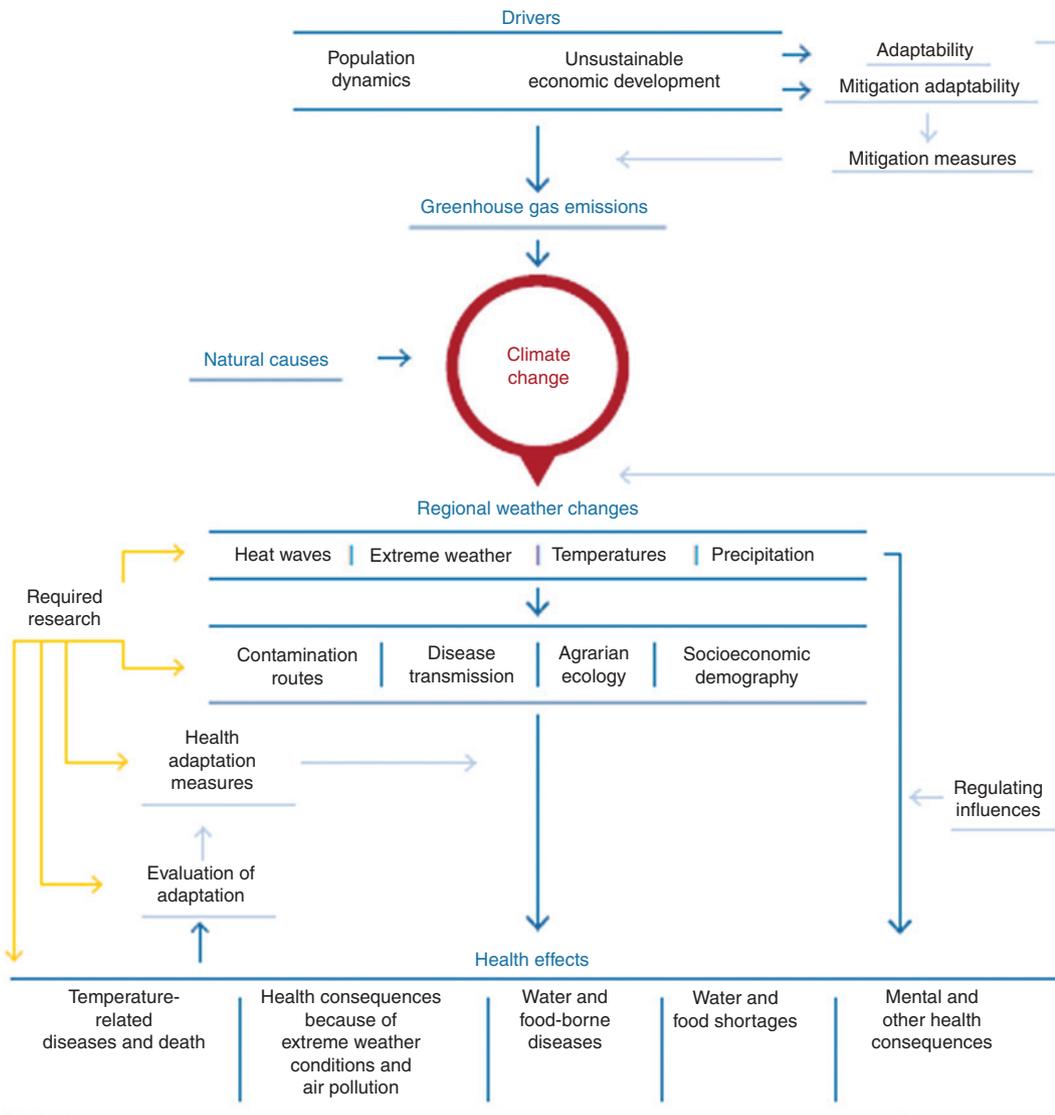


Figure 1: Interdependencies between climate change and public health. Source: Own illustration based on [2].

system alone. Urban planning processes, good governance, the reorganization of global value-added chains – to just name a few fields of action – often play an equally important role.

In the field of development policy efforts to date have focused primarily on establishing public health infrastructures. However, it has been acknowledging that, instead of merely tackling the symptoms, it is the underlying factors (*stressors*) leading to higher health vulnerability of societies which must be combatted. This also applies to the causes and effects of climate change. This additional stressor generally affects health systems which are already today performing their duties inadequately or are sometimes incapable of doing so at all: insufficient linkages of various steps in medical care (disruption), insufficient

general medical education, inadequate social support systems, or a lack of gender equality. Further, effective prevention and treatment require a great deal of knowledge of specific local conditions, and must be considered in the context of further development policy measures.

Among others the *following fields of action* play a decisive role:

1. *Global and rapid urbanization:* high settlement density in urban areas are already exacerbating a number of negative health policy effects that will only worsen with climate change: from heat islands to relocation of river and coastal areas, from high-performance potable water and sewage systems to resilient communication systems for the prevention and control of epidemics.

2. *Strengthening functional government* structures is decisive in order to appropriately respond to the health consequences of climate change [6]. Weak or lacking statehood is one of the most important factors in insufficient health care provision all over the world. Unfortunately, precisely the latter is increasing the fragility of states and societies. Shortages of food, water, and other natural resources are often laying the foundations for domestic and cross-border conflict.
3. *Global migration* as a result of climate-changed induced resources scarcity will intensify. This will endanger the stability of the receiving societies, too. International regulations for supporting climate-related migrants must therefore become a priority. This would have immediate positive effects on the state of health (both physical and psychosocial) of those affected, and on the functionality of local health systems.

Concrete approaches to a climate-resilient health policy

Mitigation and *adaptation strategies* for climate change ought ideally to go hand-in-hand, and this is also true of the health sector. Nevertheless, the focus of policy and international health research today tends to be more on adaptation.

In 2015, the WHO introduced its first comprehensive plan for combatting climate change and its associated health risks [3, 7]. The WHO's focus is on supporting member states as they tackle health risks arising from climate change so that resilience, capacities, and competence of local health systems can be enhanced and expanded locally to withstand these new pressures. The WHO defines *four fields of action* to raise global public awareness and promote more effective measures:

1. *Building partnerships*: To counter fragmented responsibilities and response a platform for improved coordination amongst the various United Nations bodies should be created in order to enhance synergy effects, and give health a higher priority in international climate diplomacy as well.
2. *Raising awareness*: Despite the significance of climate change, many countries lack a systematic and preventative discourse on the matter. Global and national institutions should invest more heavily in educating the public and decision-makers.
3. *Enhancing scientific research*: The connections between the manifold phenomena of climate change and their direct and indirect effects on Global Health

are still often unclear. A coordinated development of a global agenda and systematic monitoring of changes is therefore recommended – next to encouraging locally appropriate adaptation strategies.

4. *Supporting the ability of health care systems to respond to climate change*: The core and priority of national health policies should be to enhance the capacities of local health systems by means of training and continuing education, technical advice, provision of technical and financial support, and the development of best-practice processes.

European Cooperation

The first European Conference on Environment and Health was initiated by the WHO as early as 1989. It stipulated that each member state of the European Union must draw up a national action plan for environment and health [see 8]. The specific fields of action range from improving communication of health risks to Europe-wide action approaches. The focus is also on promoting an environmentally, climate-, and health-conscious lifestyle among the local population.

Author Declaration

Author contributions: The author had accepted responsibility for the entire content of this submitted manuscript and approved submission. Author state no funding involved. Primary data for human nor for animals were not collected for this research work.

Autorenerklärung

Autorenerklärung: Der Autor trägt die Verantwortung für den gesamten Inhalt dieses Artikels und hat der Einreichung des Manuskripts zugestimmt. Der Autor erklärt, dass er keine finanzielle Förderung erhalten hat und kein wirtschaftlicher oder persönlicher Interessenkonflikt vorliegt. Für die Forschungsarbeit wurden weder von Menschen noch von Tieren Primärdaten erhoben.

References

1. Knutson T. Appendix C: Detection and attribution methodologies overview. In: Climate Science Special Report: Fourth National Climate Assessment, Volume I. U.S. Global Change Research Program. Washington, 2017:443–51.
2. World Health Organisation (WHO). Climate change and health. 2018. <https://www.who.int/news-room/fact-sheets/detail/climate-change-and-health>.

3. World Health Organisation (WHO). 62nd World Health Assembly, A62/11 Provisional agenda item 12.7 6 March 2009, Climate change and health. World Health Organisation (WHO), 2009. https://www.who.int/globalchange/A62_11_en.pdf.
4. Campbell S. Heatwave and health impact research: a global review. *Health Place* 2018;53:210–8.
5. Mitchell D, Heaviside C, Vardoulakis S, Huntingford C, Masato G, Guillod B-G. Attributing human mortality during extreme heat waves to anthropogenic climate change. *Environ Res Lett* 2016;11:074006.
6. United Nations. Goal 16: sustainable development knowledge platform. 2019. <https://sustainabledevelopment.un.org/sdg16>.
7. World Health Organisation (WHO). Workplan on climate change and health: aims and objectives 2014–2019. 2015. https://www.who.int/globalchange/health_policy/climate-change-and-health-workplan-2014-2019.pdf.
8. Umweltbundesamt. Aktionsplan Anpassung der deutschen Anpassungsstrategie. Umweltbundesamt 2019. <https://www.umweltbundesamt.de/themen/klima-energie/klimafolgen-anpassung/anpassung-auf-bundesebene/aktionsplan-anpassung#textpart-1>.