CONCLUSION

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A few weeks prior to COP29 (held in Baku, Azerbaijan, in November 2024), the WHO published a special report demanding "urgent integration of health in climate negociations" and calling on policymakers to make health a decisive argument for climate action.[1] Rooted in the belief that **"the climate crisis is a health crisis"**, this issue of FACTS Reports explores some of the main interdependencies linking climate, environment and human health: a threeway matrix where each domain exerts a systemic influence on the others, making it vital to examine all the challenges from a multi-disciplinary standpoint and to implement properly coordinated holistic strategies. Faced with the multiple complex repercussions of climate change on ecosystems, socio-economic structures and human health, this 360-degree vision is essential to tackling presentday challenges and preparing for the threats of tomorrow. Consistent with the One Health approach promoted by the UN, the thirty experts who have contributed to this publication explore different aspects of the same worrying socio-environmental reality.

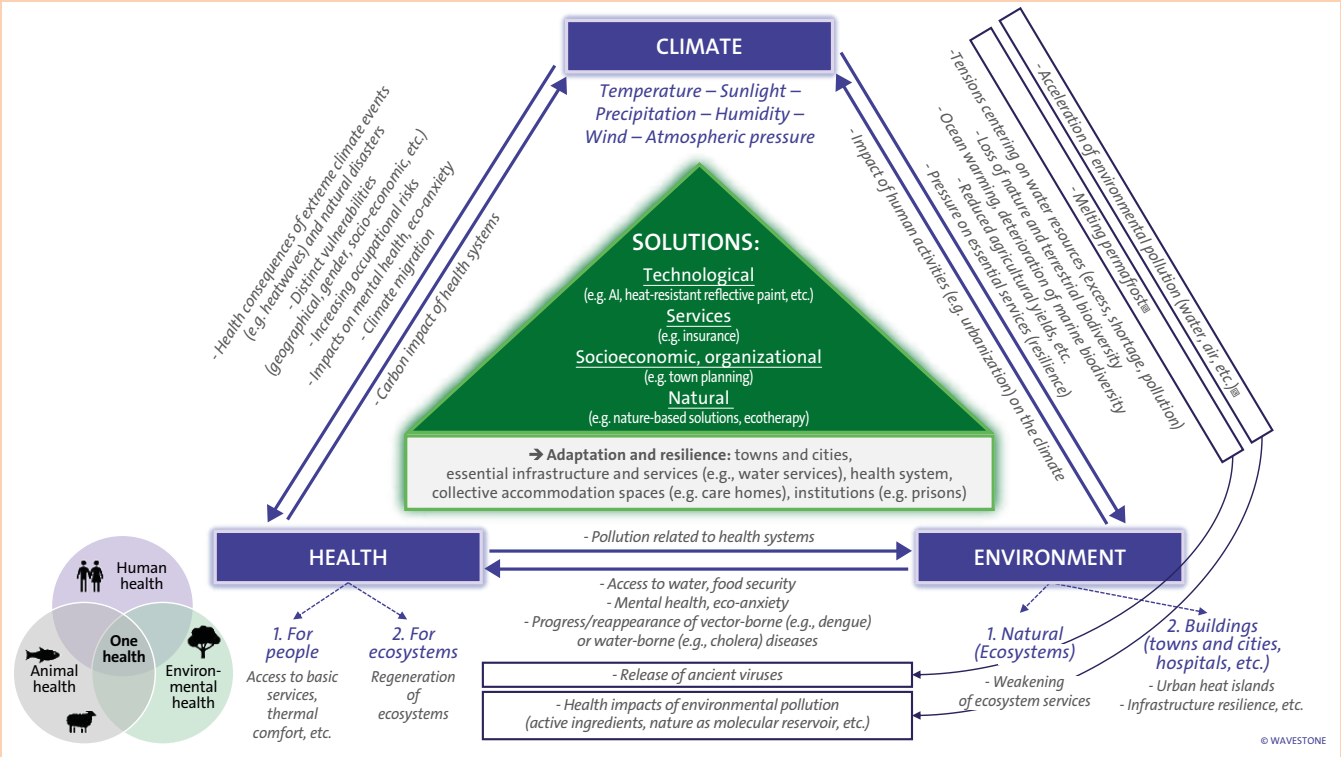
As the diagram below shows, the articles in this issue seek to describe a set of interconnections and systemic risks that relate directly or indirectly to the consequences of climate change on human health and the environment.

The threat is real: 700 million people may be displaced by drought by 2030.[2] The climate crisis also has a direct impact on the natural environment by reducing available water resources and threatening ecosystems, again with real-world repercussions on human health. According to the World

1 *COP29 Special Report on Climate Change and Health*, World Health Organization, November 2024.

2 United Nations Convention to Combat Desertification (UNCCD). (2022). *Drought in numbers 2022.*

***Figure 1:* Schematic representation of the links between climate, health and the environment**



Source: Wavestone (2024)

Meteorological Organization, in 2022, prolonged droughts have affected approximately 3.6 billion people worldwide, leading to water stress and food insecurity for many.

Furthermore, environmental disruption caused by climate change can trigger **cascading repercussions on human health,** although the causal chain is not always easily traceable. The accelerating rate of permafrost melt is an example of one of the as-yet little anticipated indirect risks of climate disruption. In 2016, over 2,300 reindeer were poisoned by anthrax[3] bacterium released by thawing carcasses of the same animal species. Caused by global warming, permafrost melt may release other ancient bacteria and viruses that have been trapped in the ice for millennia and are liable to create new risks to human and animal health owing to an absence of adequate immunity.

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These conclusions point to a **new form of inequality: climate injustice.** Certain vulnerable regions feel the full force of the effects of climate change, with vulnerable groups in the population very often the most exposed. For example, drought and torrential rains have ravaged Kenya's Nyanza region, an area with a widespread incidence of HIV/AIDS, aggravating food insecurity, population displacement and the already limited access to healthcare, which in turn intensifies health impacts among marginalized communities.

The identification and gradual quantification of the multiple risks relating to climate disruption highlight the need for collective mobilization to tackle it. This mobilization is needed at different levels, from individuals to policymaking, businesses to multi-actor coalitions. This issue of FACTS introduces several possibilities for solutions and strategies to mitigate or slow the harmful effects. Several complementary approaches have been identified.

- **A technological approach:** innovations can be rolled out to monitor, analyze and mitigate negative health and environmental impacts. This includes advanced tools using artificial intelligence, IoT sensors and modelling systems to predict extreme climate events and design targeted interventions to improve resilience among communities and ecosystems.
- **A services-led approach:** seeking to reduce the impacts of climate change on human health and the environment, this approach offers services that provide individuals with effective protection and support. For example, more inclusive insurance services that provide basic cover without add-ons, making insurance more affordable to lower income groups.
- **A planning-led approach:** public policies, organizations and collective initiatives play a key role in crafting an integrated response to environmental, climate and health challenges. Towns and cities, major emitters of CO_2, have to reinvent themselves to both reduce their climate impact and generate co-benefits for public health and social well-being.
- **An approach based on or leveraging nature:** solutions inspired by the natural environment can also be implemented to tackle disruption caused by climate change. Biomimetic[4] solutions provide one example. The International Union for Conservation of Nature (IUCN) defines Nature-based Solutions (NbS) as actions to protect, sustainably manage, and restore natural and modified ecosystems that address societal challenges effectively and adaptively, simultaneously benefiting people and nature.[5] Human health, particularly mental health, can also be bolstered using nature-based approaches: eco-therapy, for example, focuses on reviving connections with nature and the living world to combat worries and anxieties experienced in the face of ever more visible environmental disruption.

The necessary combination of these different approaches makes a two-pronged strategy possible: anticipating the inevitable effects of climate change, while also cutting the environmental damage caused by our activities in order to prevent the climate crisis from spiraling out of control. Furthermore, the resilience of ecosystems and human societies must be reinforced through genuine and long-lasting ecological, social and cultural transformations. In this regard, individual and collective commitment is a prerequisite. According to the Elabe barometer,[6] **67% of people in the world say they are ready to accept the additional costs and changes in behaviors that ecological actions involve, providing that they help protect their health and that of their family and friends.** Faced with this growing individual awareness, harbinger of a possible move to scale, widespread eco-anxiety may emerge from the youngest generations' almost omnipresent concern: 70% of 16-25 year olds declare that they are very or extremely worried about climate change.[7]

Worries about the heath consequences of climate change are thus evolving: once a collective concern, they are shifting to take the form of a more personal sense of anxiety. In the past, the perception that responsibility was diluted on a global scale could make it difficult to assign 'fault'. Today, responsibility is taking on far more importance, including at the individual level. This is the building block upon which important preventative measures could be implemented. This greater level of individual awareness must be the starting point for a more lasting collective mobilization, essential to protecting the health and well-being of humanity in the face of the challenges posed by climate change.

3 Source: *National Geographic* (2024). Melting cryosphere: ancient viruses may escape from the ice https://www.nationalgeographic.fr/sciences/environnement-fonte-de-la-cryosphere-des-virus-millenaires-pourraient-sechapper-des-glaces.

4 "Biomimetics consists of taking inspiration from the essential characteristics (such as shapes, compositions, processes, interactions) of one or more biological systems to design procedures and organizations that allow societies to develop sustainably."

5 International Union for Conservation of Nature (IUCN). https://iucn.org/our-work/nature-based-solutions.

6 Barometer developed in partnership with Veolia.

7 Hickman, *C., et al* (2021). Climate anxiety in children and young people and their beliefs about government responses to climate change: a global survey. *The Lancet Planetary Health, 5*(12), e863–e873. https://doi.org/10.1016/S2542-5196(21)00278-3.