This Project is funded by
the European Union

HEALTH
ENVIRONMENT
AND CLIMATE
TURKEY

BRIEFING:

A One Health Approach to Climate Change and the COVID-19 Pandemic

ASSOCIATION OF PUBLIC HEALTH SPECIALISTS 1995
HEAL HEALTH AND ENVIRONMENT ALLIANCE
KOCAELİ ÜNİVERSİTESİ 1992

Introduction

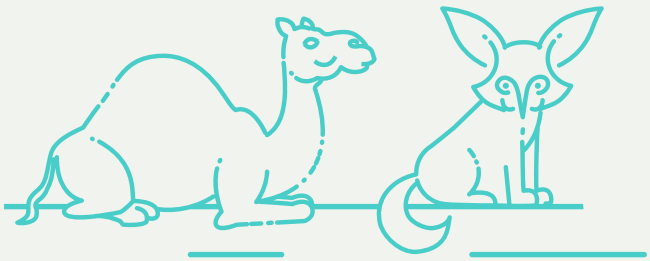
The impacts of climate change on human health are not limited to the increase in average temperatures and the melting of glaciers. Climate change is also the cause behind human and animal migration, the increase in extreme weather events, the emergence and spread of vector-borne and waterborne infectious diseases[1], and rises in allergens, air, water and food pollution.[2]

An increase of 2-3°C in global average temperature will affect the migration pathways of mosquitoes, increasing the population at risk of malaria by 3-5 percent.[3]

The number of emerging infectious disease outbreaks has increased steadily since 1980; up to

75% **of new or emerging infectious diseases and**

60% **of the known infectious diseases are zoonotic in origin.[4]**



Many infectious diseases, including HIV/AIDS, SARS, Ebola, rabies, salmonella and West Nile virus are transmitted from wildlife to humans, and billions of people get sick and die from these viruses that are essentially environmental viruses. Protecting public health begins with the protection of environmental health and the adoption of a One Health approach.

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[1] Lancet, 2019, "The Lancet Countdown on Health and Climate", https://www.thelancet.com/action/showPdf?pii=S0140-6736%2819%2932596-6
[2] HEAL, 2020, "İklim Değişikliği ve Sağlık" infografiği, https://www.env-health.org/wp-content/uploads/2020/03/Climate-Change-Health-Infographic-turkish.pdf
[3] WHO, "Climate Change and Infectious Diseases" https://www.who.int/globalchange/environment/en/chapter6.pdf
[4] Salyer, Stephanie J et al. "Prioritizing Zoonoses for Global Health Capacity Building-Themes from One Health Zoonotic Disease Workshops in 7 Countries, 2014-2016." Emerging infectious diseases vol. 23,13 (2017): S55–S64. doi:10.3201/eid2313.170418

1. One Health: A Transdisciplinary Approach

The One Health approach recognises that human health is closely connected to the health of animals and our shared environment.[5] The One health terminology dates back to the 19th century. It was recognised by Dr. Rudolf Virchow, a pathologist working on human and veterinary medicine.[6]

According to the **One Health** approach, the health of the ecosystem cannot be separated from the health of all humans, animals, plants, and their living environments.

One Health issues include climate change, zoonotic diseases, antimicrobial resistance, food safety and security, vector-borne diseases, environmental pollution and other health risks to humans, animals and the environment.

In addition, chronic illness, mental health, injury, occupational health and non-communicable diseases can be addressed with this approach that entails transdisciplinary cooperation.

In his opening remarks at the 2020 World Health Assembly[7], the WHO Director General Dr. Tedros Adhanom Ghebreyesus has underlined that the pandemic is a reminder of the intimate and delicate relationship between people and planet; any efforts to make our world safer are doomed to fail unless they address the critical interface between people and pathogens, and the existential threat of climate change that is making our earth less habitable.

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[5] CDC, 2018, "One Health Basics", webpage retrieved on 11th November 2020, https://www.cdc.gov/onehealth/basics/index.html
[6] CDC, 2016, "One Health History" webpage retrieved on 25th November 2020, https://www.cdc.gov/onehealth/basics/history/index.html#:~:text=Dr.,passed%20between%20humans%20and%20animals.
[7] https://www.who.int/director-general/speeches/detail/who-director-general-s-opening-remarks-at-the-world-health-assembly

2. One Health and Climate Change

Migration

Climate change threatens the access to clean air, safe drinking water, nutritious food and safe shelter of humans and animals alike.

Rising sea levels, melting glaciers, extreme weather events, heatwaves, droughts, and wildfires are forcing more and more species to migrate.

This change in environmental conditions and habitats creates new opportunities for the transmission of diseases to animals and from animals to humans.

Furthermore, the stress they experience to meet their need for food and shelter makes species vulnerable to viral diseases.

Food and Water Security

Clean air, clean water and extreme weather events are also important for plants and agricultural products. So much so that climate change is expected to cause 250,000 additional deaths per year between 2030 and 2050, with 144,000 due to viral diarrhea and malaria and 95,000 due to childhood undernutrition.[8]

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[8] WHO, 2018, "COP24 Special Report: Health & Climate Change", https://unfccc.int/sites/default/files/resource/WHO%20COP24%20Special%20Report_final.pdf

3. One Health and Animal Welfare

Wildlife Trade and Trafficking

Many wild animals are sold for their meat, skin, teeth or nails, or as pets and are raised in extremely adverse and stressful conditions. They come into contact with each other and humans in uncontrolled environments making the emergence of infectious diseases inevitable.

Furthermore, wildlife trade can transport wild animals and their pathogens to geographic areas they cannot otherwise reach as in the case of the West Nile Virus, which was introduced to the Northern hemisphere and is now an established virus.

Wildlife trafficking, with an estimated US $ 7-23 billion per year, is the world's fourth most profitable clandestine market after trafficking in counterfeit goods, drugs and people.[9]

The fact that COVID-19 emerged in a geographic area where wildlife trade is so concentrated and uncontrolled is not a coincidence.

Hunting

The hunting and consumption of wild animals is one of the principal ways by which many zoonotic agents are transmitted to humans. Livestock and their products are controlled by veterinarians at every stage of the supply chain. The uncontrolled hunting and consumption of wild animals poses great risks for hunters and consumers alike.

It should be noted that the development of new urban areas and infrastructure built for activities such as mining activities facilitates smugglers and hunters' access to wildlife.

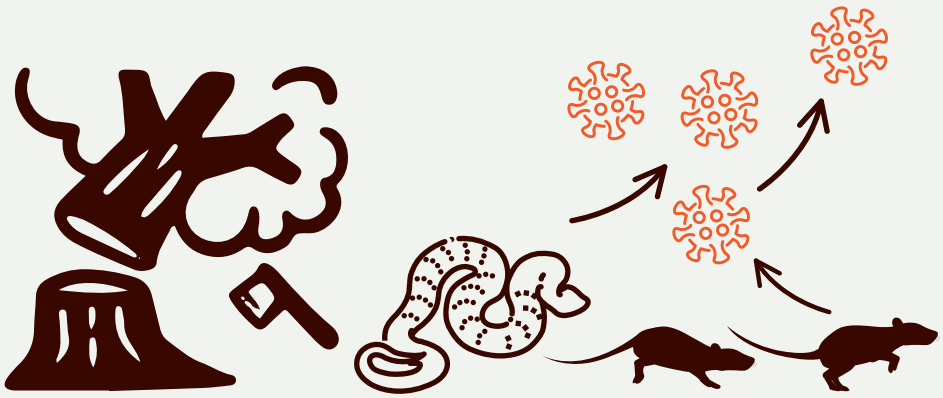
[9] WWF, March 2020, "The Loss Of Nature And The Rise Of Pandemics- Protecting Human And Planetary Health", p.12.

4. One Health and Biodiversity

Loss of Biodiversity

Animals in nature harbor a high number of pathogens. However, some studies postulate that the high diversity of species decreases host-pathogen density and keeps the population of their vectors in balance, thereby reducing the contagiousness and prevalence of the disease and refer to this as the "dilution effect".[10]

Biodiversity loss is most commonly observed as a decline in predator population -who control the number of hosts and vectors- caused by the disruption of the food chain.



For example, a decrease in the snake population leads to an increase in the mice population and pathogens spread more easily.[11]

Some research findings show that the prevalence of hantavirus increases as mammal diversity decreases, and that the spread of West Nile virus is associated with decrease in the non-passerine (non-songbird) bird population.[12] Other research indicates that there has been a 60 percent decline in the vertebrate population worldwide in as little as 40 years.[13] There is no doubt that this has caused dozens of different infectious diseases that remain to be known. Climate change is also one of the causes of species extinction.

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[10] Luis, A.D., Kuenzi, A.J., Mills, J.N., 2018, "Species diversity concurrently dilutes and amplifies transmission in a zoonotic host–pathogen system through competing mechanisms", PNAS 115 (31): 7979-7984

[11] Tolunay, D., 2020, "Salgın Hastalıklar, Ekosistem Tahribatları ve İklim Değişikliği ile İlişkili mi?", İklimHaber, https://www.iklimhaber.org/salgin-hastaliklar-ekosistem-tahribatlari-ve-iklim-degisikligi-ile-iliskili-mi/

[12] World Health Organisation (WHO), 2015, "Connecting global priorities: biodiversity and human health: a state of knowledge review", https://www.cbd.int/health/stateofknowledge/

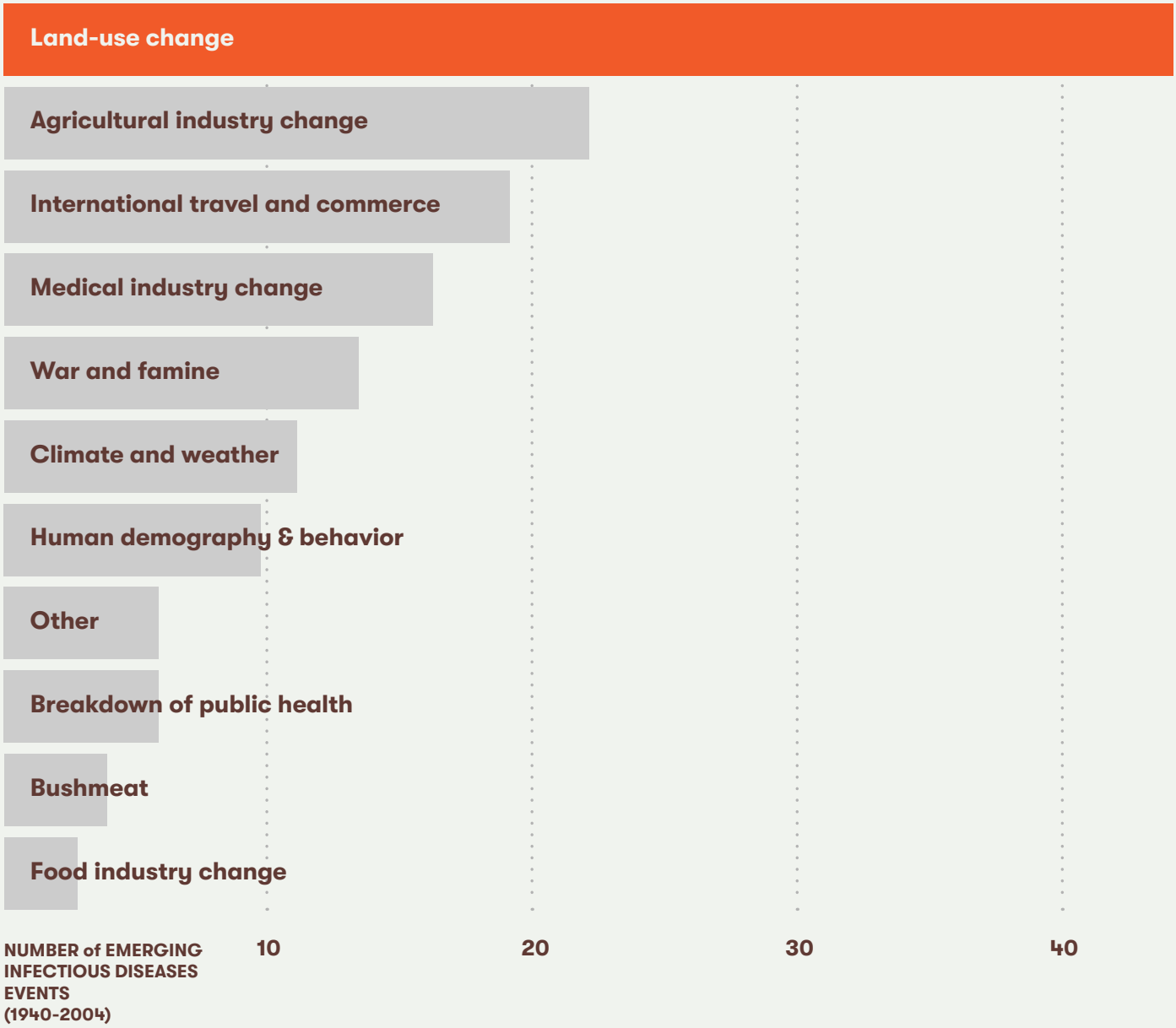
[13] WWF-Turkey, 2018, https://wwftr.awsassets.panda.org/downloads/ygo_ozet_2018.pdf

Habitat Shrinkage and Fragmentation

Habitat shrinkage, which is caused by processes such as habitat fragmentation and deforestation, may lead to unusual species encounters and enable pathogens to find more suitable hosts.[14] Furthermore, habitat fragmentation will increase human and wildlife interaction and enable pathogens to reach new hosts.

Land use changes, such as deforestation and the destruction of natural habitats, account for almost half of zoonotic emerging infectious diseases.[15]

Number of Emergence Events by Primary Drivers



[14] Keesing, F., et al, 2010, "Impacts of biodiversity on the emergence and transmission of infectious diseases", Nature, 468:647-652.

[15] Loh et al. 2015. Targeting Transmission Pathways for Emerging Zoonotic Disease Surveillance and Control. Vector borne and zoonotic diseases 15(7):432-43. doi: 10.1089/vbz.2013.1563 https://pubmed.ncbi.nlm.nih.gov/26186515/a

5. Recommendations and Actions from the Health Sector in Turkey

For Decision Makers

1. Health authorities **should adopt the One Health approach** and address risk factors associated with diseases such as COVID-19. According to the Center for Disease Control and Prevention (CDC), which operates under the United States Department of Health,[16] the One Health approach is an effective way to tackle zoonotic diseases.[17]

2. Decision makers **should consider imposing bans on all forms of wildlife capture and trade.** This step is crucial in saving wildlife species from extinction as well as safeguarding human health.

3. Environmental Impact Assessment reports are not effective for monitoring environmental health. **The Health Impact Assessment (HIA) method** recommended by the World Health Organization should be implemented, and preparations to write a legislative framework that draws on health experts' opinions regarding HIA must get underway.

4. Public funding of pollution intensive industries –**which threaten public health and hinder tackling climate change** - and those that fragment ecosystems such as the mining industry, needs to stop. Funds should be used to create jobs in alternative industries.

On May 26, 2020, more than 350 institutions representing at least 40 million healthcare workers signed an open letter to G20 leaders and demanded "Healthy Recovery" from COVID-19[18]. The COVID-19 pandemic should be a milestone for Turkey as well; decision-makers should prioritise "the protection and preservation of nature" to safeguard human health and improve the health sector's infrastructure and free healthcare in accordance with the **Healthy Recovery** demands stated in this letter.

https://healthyrecovery.net

[16] Centers for Disease and Control Prevention, https://www.cdc.gov/
[17] Centers for Disease and Control Prevention, https://www.cdc.gov/onehealth/basics/index.html
[18] HEAL, 2020, "Over 40 Million Health Professionals Urge G20 Leaders to Ensure a Health Recovery", https://www.env-health.org/over-40-million-health-professionals-urge-g20-leaders-to-ensure-a-healthy-recovery/

For Our Colleagues and Transdisciplinary Cooperation

1. Professionals from a range of areas of expertise such as public health, animal health, plant health and the environment, should join forces to support the One Health approach and to build up joint research, study and training capacities.

2. Epidemiological data and laboratory evidence should be shared across sectors to effectively detect, respond and prevent zoonoses and epidemics.

3. As we tackle the alarming effects of the COVID-19 Pandemic, we must not forget that the nature and climate crises continue to threaten our future. The climate crisis should be addressed by more disciplines and with the One Health approach. Protecting the ecosystem should be seen as an integral part of protecting the health of people and our planet.

About the Project

HEAL - Health and Environment Alliance, HASUDER - the Association Of Public Health Specialists and Kocaeli University Department of Public Health have launched the "Building Turkish Health Sector Capacity for Environmental & Climate Engagement" project aiming to support the independent collaboration among actors working for environmental health in Turkey.

The following activities are foreseen in the three-year project;

- To set up a platform on environment and climate change, which all health actors are free to join, and which aims to increase collaboration in the sector,
- To implement face-to-face workshops, virtual education seminars for medical students and online training on climate change and environment based on the public health approach,
- To set up a dialogue with professional bodies, NGOs and think tanks in Europe for health professionals in Turkey,
- To create a set of educational materials on the environment, climate and health for the health sector and the interested public.

Disclaimer

This Project is funded by the European Union

HEAL gratefully acknowledges the financial support of the European Union (EU) for the production of this publication. The responsibility for the content lies with the authors and the views expressed in this publication do not necessarily reflect the views of the EU institutions and funders. HEAL's EU Transparency Register Number: 00723343929-96.

This briefing is part of the Building Turkish Health Sector Capacity for Environmental & Climate Engagement Project. The project will be carried out from April 2020 to April 2023, by the partners Health and Environment Alliance (HEAL), HASUDER (Association of Public Health Specialists) and Kocaeli University Department of Public Health.

Publication Date
January 2021

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