Air & Water
Borne Diseases

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roduction

Global climate change is anticipated to have a wide-ranging impact l possibly adverse e ects on human health, which may be direct or rect. Direct e ects include extreme weather conditions, such as ds, and sea level rise, e.g. leading to an increased risk of drowning, temperature related e ects, such as heat waves and smog. An eased frequency or severity of heat waves would cause an increase in tality and illness. Indirect e ects may include change in distribution

Vb c eae) is one of those water-borne infectious diseases that keeps re-emerging in war zones and a er natural disasters with 3-5 million a ected each year and 100,000-130,000 deaths [13]. Water-washed diseases are the result of contact with contaminated water. One of the most prominent water-washed diseases in the world is trachoma, caused by *C a da ac q*, with 300 and 500 million infected people of which approximately 84 million people in need of treatment and about eight million people blinded [14,15]. Trachoma infection occurs most frequently in Africa whereas conjunctivitis (caused by e.g. adenoviruses) is a European example of a water-washed disease. Water-based diseases are caused by organisms that originate in the water or spend part of their life cycle in aquatic animals and come in direct contact with humans in water or by inhalation. In 2000, it was estimated that worldwide at least 200 million people are infected with schistosomiasis, a snail-borne disease, and another 600 million are at risk of infection [16]. Other examples of water-based disease more relevant to Europe include trichobilharziasis, algal diseases and

1200 diagnosed cases each year, most likely a large under representation of actual cases [49]. Adenoviruses were frequently detected in Dutch surface waters [50]. ey are capable of robust survival in water also at higher water temperatures as predicted in climate change scenarios. Adenoviruses are of equal or greater sensitivity to oxidizing disinfectants compared with other water-borne viruses and are the most resistant pathogens to UV also relevant with respect to an eventual increase in sunlight [47].

Pseudomonas: *Pe d a ae a* are aerobic, non-spore-forming, motile, Gram-negative rod shaped bacteria with an optimum

bird population, and presence of e cient mosquito vectors. In addition, disease cases have shown to depend on socioeconomics; Mexican and American sides of the same Texan city were unequally hit by WNF [93]. For Europe, the origin of the reemergence of WNF is unclear and currently investigated [94-96].

Conclusions

Predicting the impact of climate change on public health has proven to be very di cult. In part this is due to the uncertainty in predicting the multifactorial local e ects of global changes in climate [2]. But even when assuming a certain scenario as a fact, huge uncertainties due variability and incomplete knowledge over its e ect on health remain [97]. It has been found to be very di cult to quantify changes in water-transmitted infectious diseases or even to establish the direction of the changes, either negative or positive e ects. Moreover, the assessment of the additional e ect of climate change over other global changes on public health has been hampered by absent or low-resolution epidemiological data on current infectious disease burdens. Nevertheless, the demands for solutions, how to mitigate its e ects and how to adapt human societies to changes are present and pressing. To this end, developments of detailed and speci c projections are needed, instead of building a general theory of climate change and infectious disease around the one-tailed prediction that climate change will increase the problem of infectious diseases.

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