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Editorial

Special Issue—"Sanitary and Environmental Engineering: Relevance and Concerns"

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The environment consists of living and inanimate elements that mutually interact and affect each other's health and lifespan. Anthropogenic sources of pollution are of particular concern as they are increasing exponentially, constituting a rate faster than ever before in the Earth's history. A 2016 report reported that 24% of global deaths are due to changing environmental factors [1]. In addition, since 1970, the average wildlife population size decreased by 69% [2]. These phenomena show that health and environmental sciences are key factors in terms of responding to the changing environment in order to live healthily, in coexistence, and in prosperity. Major concerns regarding health and the environment are at the heart of the Sustainable Development Goals of the United Nations Educational, Scientific, and Cultural Organization [3], which are a collection of interconnected goals intended to serve as a common blueprint for global peace and prosperity for the current period and in the future [3]. In addition, the sustainable development goals are directly or indirectly related to sanitation and environmental technology. For example, the goals of no poverty and no hunger can greatly improve public health, facilitate improved well-being, and promote healthy lifestyles at all ages, and ensuring clean water and sanitation can improve water security and facilitate access to sanitation. In addition, the realization of sustainable cities and communities can make our settlements safe, resilient, and sustainable. Responsible consumption and production will reduce pressure on the environment, reduce food waste and chemical use, and increase recycling. Climate action will strengthen the resilience of communities and increase adaptive capacity and responses to climate-related disasters. Ecosystem conservation will protect organisms from degradation and biodiversity loss. Finally, international cooperation will strengthen the implementation of these goals through the exchange of knowledge, expertise, and experience between nations. More than ever before, humanity is being called upon to take action to protect the environment and public health. The environment in which we live is the most important factor of our health and well-being. Human activities have a significant impact on the atmosphere, lithosphere, hydrosphere, biosphere, and even outer space. Biological, chemical, physical, and social risk factors are components of our daily lives, and scientific research is constantly challenged to understand and mitigate these interactions to make life on Earth more sustainable (Figure 1). The sustainability of human societies and the biodiversity that supports them requires the responsible management of natural resources, including the development of technologies and regulations.

This Special Issue, *Sanitary and Environmental Engineering: Relevance and Concerns*, addresses these issues and proposes solutions to current and future crises. Food safety is an important value in modern society, especially as we face increasing environmental changes and geopolitical tensions. For example, a study by Yang et al. [4] showed that predicting the disease density of maize through a multi-scale patch-embedding module could accurately predict maize diseases, which would thereby increase food safety. In addition, Jevšnik et al. [5] analysed food safety knowledge, practises, and hygiene statuses in a household kitchen and found inadequate hygiene in a quarter of the cases analysed. Although they found that the respondents had some knowledge about hygiene, they failed

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when presented with a real situation. A study by Slabe et al. [6] surveyed climbers with respect to their food safety habits and reported that food safety training should be included in general training programmes for climbers. Indoor air quality affects our health by causing sick building syndrome and other lung diseases. Galičič et al. [7] highlight macro- and micro-climatic factors and the distance of schools from pollution sources as having important influences on indoor air quality. However, indoor air quality has also influenced the spread of SARS-CoV-2. As reported by Galičič et al. [8], non-pharmacological measures such as self-testing, hygiene, and ventilation should be used if the pandemic slows down. All this shows once again how different factors and hazards in sanitation are interconnected and should not be neglected in decision making (Figure 1). Changes in the environment, especially of an anthropogenic nature, are of the most concern and have significant impacts on humans and ecosystems. The eco-environmental quality index was introduced by Xia and Zhen [9], which considers both land use and environmental quality. They found that land use is the most important factor of the quality of the ecological environment, whereas other factors do not play a significant role. In addition, Zhan and Yang [10] found that adding the PM 2.5 concentration model helps to predict impacts using the beetle swarm algorithm. In addition, Wang et al. [11] simulated an environmental policy to reduce construction waste and concluded that the policy should be implemented in relation to the phases of urban development. The simulation, prediction, and modelling of environmental factors are essential to understand causes and consequences and evaluate environmental interventions. Nevertheless, cleaning and maintaining hygiene at a sufficient level requires the application of the correct disinfection approach. For example, Zekanović et al. [12] proved that a combination of ultraviolet light and hyperchlorination is more effective against *P. aeruginosa* biofilms than either of the methods used separately. Similarly, Piletić et al. [13] analysed combined methods of gaseous ozone and citric acid against *A. baumannii* and found a 99.99% inhibition rate. In the last decade, natural detergents have attracted a great deal of attention due to their low toxicity and remarkable performance in cleaning and disinfection. A study by Fink [14] showed that natural terpenoids can be as effective as a standard antimicrobial agent chlorhexidine against *E. coli*, *P. aeruginosa* and *S. Typhimurium*.

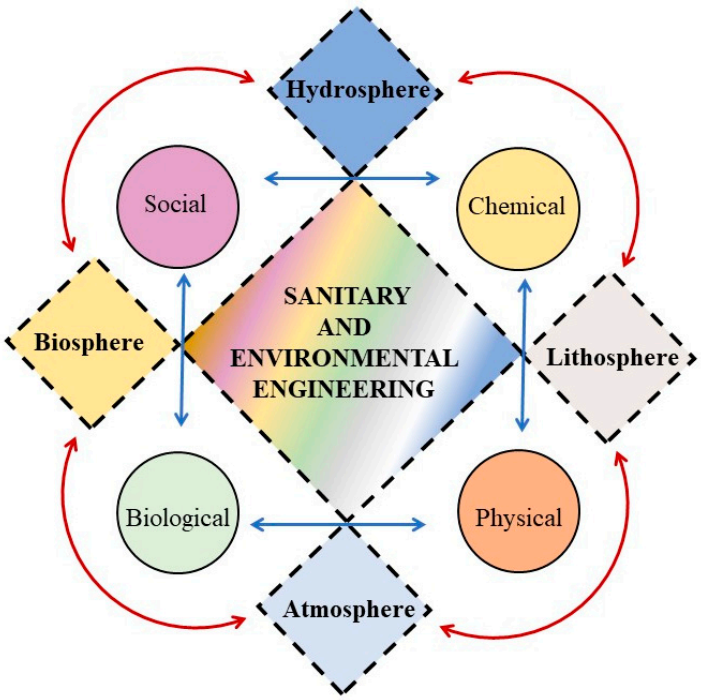

Figure 1. Conceptual figure of sanitary and environmental engineering subsystems and hazards.

Current sanitary and environmental engineering practices represent the basis for the One Health for All approach. Researchers, officials, and health professionals should collaborate to respond to global health threats, as environmental subsystems are interconnected, and threats spread through many of them. It is humanity's responsibility to take care of the environment and, by extension, health. Our presence on the planet is short-lived compared to other organisms, and we should be careful not to put a long-term strain on ecosystems. Sanitary and environmental engineering can help to comprehend this duty and provide answers to the challenges faced by modern society.

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