



Opinion

One Health: Connecting environmental, social and corporate governance (ESG) practices for a better world

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1. The One Health principle

The emergence and dissemination of infectious diseases are often associated with human-induced habitat degradation that alters biodiversity and consequently, host-pathogen dynamics [1]. The strategic use of natural resources, appropriate disposal of waste and environmental protection are important mechanisms that promote health and well-being of humans, animals, plants, and the environment as they can both impede and prevent pathogen evolution [2]. This is well known in academia and government regulatory bodies where there is an increasing consensus that a broader, integrated, and holistic approach should be considered to effectively tackle complex public health problems.

One Health is a transdisciplinary, multisectoral and integrated approach that improves our capacity to solve pressing public health problems that threaten our civilization. The principle relies on the association of health at the human, animal, environmental and plant interface of the biosphere. One Health has been recognized by the World Health Organization (WHO) as the approach of choice to tackle health issues requiring complex solutions [3] and has recently been widely adopted by the quadripartite, which also includes the Food and Agriculture Association (FAO), World Organization for Animal Health (OIE) and United Nations Environment Program (UNEP). Often, these pressing issues are the result of complex situations in which little is known about the targeted emerging pathogen or its variants, as with the recent COVID-19 pandemic. However, the majority of severe and chronic

problems affecting human and animal health are caused by agents with well understood epidemiology and mechanisms for prevention and control. These diseases remain a burden to our civilization because of their multifaceted nature where gaps in communication and leadership are key drivers limiting implementation of solutions. The One Health approach considerably improves our ability to tackle such problems effectively.

2. Environmental, social and corporate governance (ESG) practices

ESG is a consolidated term referring to the impact of a given business on society and the environment. It depends on robust and transparent governance to incorporate the identification, assessment and management of sustainability-related risks and opportunities in respect to all stakeholders and the environment [4]. ESG is not a novel concept and emerged in the 1960's. Its framework is rooted in the principle of corporate social responsibility (CSR) [5], a voluntary business initiative aimed at managing business in an ethical and sustainable manner. In this scope, the ESG concept emerged from stakeholder theory, which suggests that the relationship of a given company with its stakeholder groups is central to its potential to build sustainable wealth [6]. The current ESG framework is a broad, dynamic concept that embeds CSR principles while also including activities related to corporate governance (CG) and sustainability [1,6]. Therefore, ESG represents a value creation core strategy for companies by generating a positive and

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meaningful impact on society and the environment.

Current ESG practices, also known as ESG 1.0, consist of policies that have been implemented without measuring their impact by means of quantifiable methods [7]. Quantifying the impact of these practices could improve the company's public perception and attract interest from consumers and investors. However, the evaluation of these implementation efforts has been a challenge due to lack of quantifiable methods, other than the amount of funds provided for philanthropic purposes. Optimistically, the intensification of climate change, water scarcity, and the resulting global health and food security crises [8] have triggered investment flowing to the productive sector worldwide. This is an encouraging trend, with ESG assets predicted to reach \$30 trillion USD by 2030 [9]. Therefore, more than ever before, investors need to ensure that ESG practices are implemented effectively and quantitatively show how they contribute to improving our world.

Financial markets are committed to ESG criteria through investment decisions that are cornerstones of sustainability. Technology provides effective ways to track ESG-related initiatives, allowing companies to show how they improve the environment and contribute to societal progress towards achieving the Sustainable Development Goals [10] while simultaneously improving company growth. Specifically, the revolution of information technology, such as the development and spread of blockchain technologies, improved logistic and supply chain capabilities and big data analysis, open novel perspectives to warrant visibility and transparency of corporate actions. Advancement in the quality of standardized data management and security is enabling advisors to deliver a wider array of more accurate ESG investment models to help investors better understand the impact of their financial decisions [7]. Consequently, we are now experiencing a shift towards ESG practices 2.0, characterized by improved regulatory policies and shifts in leadership competencies [11].

Notably, company corporate financial performance (CFP) is not negatively affected by ESG practices. On the contrary, many studies report a positive relationship between ESG and CFP [12].

3. Why ESG should be deep-rooted in the context of One health

Governments must rely on technical knowledge to inform policy therefore, it is critical that scientists propose solutions based on integration of the One Health pillars including human, animal, plant, and environmental sectors. Policy-makers must consider these solutions in integrated ways to improve the effectiveness of the holistic health systems. Currently, intensified One Health discussions in academia targets the public sector, focusing on influencing policy development under the assumption that politics are the only mechanism that can effectively put One Health solutions into practice [13]. However, One Health has an undeniable capability to develop new collective action networks [14], which has yet reached the private sector where further progress can be achieved. Therefore, One Health should be effectively incorporated into ESG practices that should be effectively communicated among the partner institutions.

The benefits of private sector ESG practices to addressing societal issues through a One Health approach are unquestionable. For example, the COVID-19 pandemic revealed vulnerabilities of traditional approaches and initiatives that are structured in silos and lack synergic actions among the business, government, and academic sectors. The pandemic stimulated urgent and positive action among industry groups and governments, allowing industry groups such as Merck and Pfizer to expedite the production of the COVID-19 vaccine. Rapid implementation of diagnostic kits was also a result of ESG that involved industry groups such as Abbott. Some companies also joined forces with non-governmental institution such as Bill & Melinda Gates Foundation. Remarkably, the communication and leadership initiatives led by these companies were able to more efficiently address the challenge of vaccine production and diagnostics, critical components of pandemic mitigation.

While ESG practices are generally disseminated vertically through the supply-chain (companies demand suppliers to meet ESG criteria for products and services), it is the horizontal initiatives (ie., company-company, company-government, company-academia) in which ESG practices are aligned to address maximize impact.

Thinking broadly, one must acknowledge that a majority of public health problems are due to endemic diseases caused by known pathogens circulating consistently in a given ecosystem that can sporadically become epidemic and cause outbreaks. Therefore, the implementation and consolidation of ESG practices addressing endemic diseases have a great potential to prevent large outbreaks of diseases affecting human and animal populations worldwide. Contrary to the COVID-19 situation, where there is still a lack of information about the biology and epidemiology of the causative agent, in-depth knowledge does exist for many endemic diseases globally. Answering the question of why these diseases persist and continue to cause a major burden on our society is indeed complex and beyond the scope of this manuscript. However, we note the fact that the effective control, reduction, or even eradication of such diseases requires a multisectoral and transdisciplinary initiative. This is in line with the convergence-based approach referred by the National Academies [15] as a key strategy to tackle complex challenges and achieve new and innovative solutions.

It is the One Health approach that fulfills this requirement through transdisciplinary integration of diverse disciplines at the human, animal, plant and environmental interface.

From a One Health perspective, the unique capabilities of industry groups to execute ESG initiatives should be leveraged to maximize response to threats. Considering the enormous capacity of individual companies and their rapid communication ability, the private sector will be critical to integrated and properly communicated ESG practices, with the potential to generate a novel model to tackle and solve societal burdens and, most critically, save lives and improve livelihood at reduced costs in a timely manner.

Although the importance of One Health is a comprehensive approach, it has largely been implemented by government and academia. The private sector has yet to widely embrace the One Health concept. Once embraced, the capacity to handle public health problems and enable effective preparedness, prevention, and rapid response and control when epidemics or pandemics occur will be immensely enhanced. This is not only because of the much-needed technical role that industry can play but also because of higher financial capacity, operational efficiency, communication, and reduced bureaucracy within the private sector. For instance, the estimated budget of the Brazilian Ministry of Health in 2022 was \$147 billion BRL compared to the investments raised by only one Initial Public Offerings of Stocks (IPSS) in the Brazilian stock market in 2021 which was \$155 billion BRL. In the United States, the annual Research and Development expenditure surpassed \$650 billion USD out of which only roughly \$85 billion USD is funded to academia. A significant portion of the remaining funds are used by private industry and other federal research bodies [16].

Collaborative work between Merck and the World Health Organization (WHO) on the elimination of schistosomiasis, a vector-borne parasitic disease which still affects more than 240 million people worldwide and cause around 200,000 deaths annually [17], highlights the power of public-private partnerships to enhance One Health implementation. Working together, Merck and the WHO provided donations of a drug known to be effective in combating the disease (Praziquantel®) resulting in treatment of 400 million school-aged children in Sub-Saharan Africa since 2007 [18].

4. Why One Health should be embraced by private partners

One Health is a holistic, integrated, powerful, and efficient approach not to be confused as a synonym for public health, global health, or any other discipline. Communication and leadership are key cornerstones to delivery of effective solutions for the problems that affect today's world. The One Health approach can allow effective prevention of potentially

catastrophic epidemics and pandemics, thereby saving countless lives and preventing loss of large amounts of money that could have a detrimental impact on diverse sectors of industry. The cost of the COVID-19 pandemic is known to surpass \$9 trillion (World Economic Forum, 2022). Effective engagement and investment of ESG by industry groups prior to the onset of this pandemic could have minimized the financial damage and indeed saved a large number of lives.

One Health fits the demand for ESG 2.0 leaders. According to Harrison et al. [11], senior ESG leaders are likely to have experience across multiple functions, most often sustainability, finance, and corporate strategy, which contrasts to earlier trends. The One Health approach, can help put horizontally driven ESG practices into practice and recognize the synergistic effects of companies putting efforts together to improve their ESG practices as a collective initiative.

This vision of One Health implementation does not imply that the public sector abdicate its role in public health, but rather emphasizes that public health regulatory and research sectors of government complement with industry ESG. They must support each other's actions to resonate in a transdisciplinary partnership among academic, government and industry partners. There is an urgent need to break down the barriers imposed by the bureaucratic division of responsibilities among institutions and even by the organizational culture that limits the dissemination of information [8]. Once industry partners incorporate the One Health concept, we foresee a greater impact of collective ESG initiatives for the betterment of society.

Author statement

CJBO and WAG contributed equally in this opinion paper in the following roles: conceptualization, writing and revising.

Declaration of Competing Interest

The authors declare that there are no financial and personal relationships with people or organizations mentioned in the manuscript.

Data availability

No data was used for the research described in the article.

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