

The Impact of Health on Environmental and Sustainable Development

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Abstract

The environment impacts our health in a variety of ways. The interface between human health and the environment has been comprehensively studied and environmental risks have been verified to considerably impact on human health, either directly by showing people to destructive agents, or indirectly, by disrupting life-sustaining ecosystems . Investments in health, mostly avoidance of ill health, improve a country's economic output through their effects on educational achievement and skills acquisition, labour productivity and decent employment, increased savings and investment, the demographic transition and impacts on the earth's ecosystem. Good health is accordingly an end in itself and it plays an integral role in human competences and well-being. This paper is an effort to present a relationship between health and sustainable development. Sustainable development can't achieve without good health of the citizen. In this paper we critically review literature on the impact of environmental changes on public health. This paper is divided into four parts. First part of this paper is about conceptualization of human health, second part about conceptualization of environment, third part about relationship between health and sustainable development, Impact of health on Environmental and Sustainable Development and in the last about the conclusion drawn.

Keywords- *Ecosystem, Environmental risks, Human Health, Human Capabilities, and Sustainable Development.*

1. Introduction

According to the WHO (1993)[1], environmental health “comprises those aspects of human health, including quality of life, that are determined by physical, chemical, biological, social, and psychosocial factors in the environment. It also situations to the theory and practice of measuring, correcting, controlling, and preventing those aspects in the environment that can potentially affect adversely the health of present and future generations”.

Meanwhile environmental health aims to protect not only present but also future generations, is very much in line with the idea of sustainable development, which is defined by the Brundtland Report as development that “meets the needs of the present without conceding the ability of future generations to meet their own needs”. This link between environmental health and sustainable development needs to be highlighted, and national and global rules in these areas should be complementary and mutually beneficial.

A healthy population is a prerequisite for a productive and creative society, which in turn is needed to sustain national development [2]. Uncontrolled and unsustainable development that spoils the natural environment and its resources, though, is a major source of environmental health problems.

In 1992, the world's leaders adopted the principles of the Rio Declaration and Agenda 21 as the route to sustainable development in the 21st century. Thus, the importance of investing in improvements to people's health and their environment as a prerequisite for sustainable development was recognized at the highest decisionmaking levels. Human health was highlighted as a central feature of sustainable development; Principle 1 of the Rio Declaration stated, "Human beings are at the Centre of concerns for sustainable development. They are authorized to a healthy and productive life in harmony with nature.”[United Nations. Agenda 21].

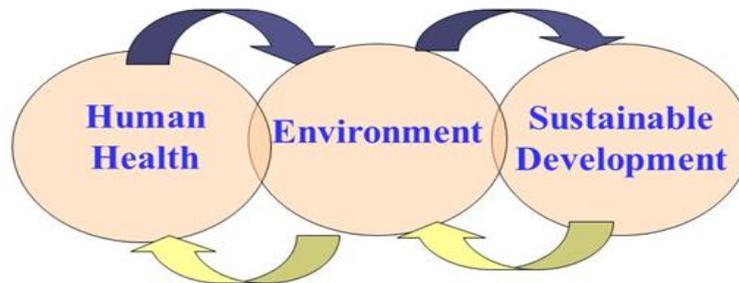
In the 6 years since the Earth Summit, promise to acquiring human health and a healthy environment has become widespread, as evidenced by a number of declarations and statements that have emanated from recent international conferences [World Health Organization 3] Many countries have formulated or are in the process of formulating national plans for sustainable development that give increased weight to health and environment concerns. These plans, however, need to be supported and implemented by all sectors contributing to economic development, and progress toward sustainable development needs to be monitored. The links between development, environment and health have been described in Agenda 21 [United Nations. Agenda 21], discussed by others [Litsios, Warford JJ.] and combined at the global level in a recent World Health Organization report. [United Nations. Agenda 21].

From a historical perspective, we have evidence that the decline in morbidity and mortality in the past century was due in great part by changes in health determinants: limitation of family size, improvement of diet, a healthier physical environment [4], and specific preventive measures. [McKeown] The importance of clean water and sanitation for health was accepted by the hygiene and sanitation movement in the United Kingdom and other countries as early as the 19th century. [Beaglehole R, Bonita].

Conceptual Framework

The systematic process expands the concepts that together accumulate the theoretical framework of health, 'Environment' and 'sustainable development' and each concept represents distinctive meanings of the theoretical framework.

Health-and-Environment Cause-Effect Framework



Objectives of the study:

- 1). To study the concept of Human health
- 2). To study the concept of environmental issues
- 3). To Examine the health dimension of sustainable development.

1.1 Health

Health is an essential dimension for sustainable development. Health is a great importance as an end in itself and as an integral part of human well-being, which includes material, psychological, social, cultural,

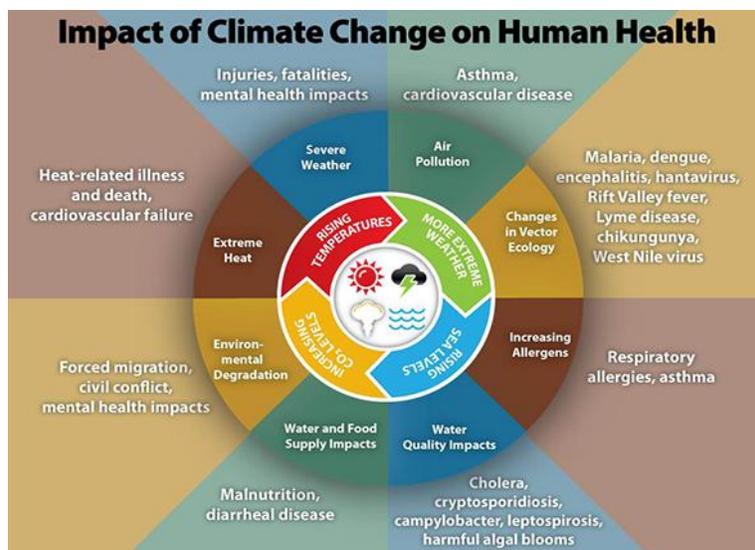
educational, work, environmental, and personal security dimensions. These dimensions of well-being are interrelated and interdependent [5]. Investments in health, particularly prevention of ill health, improve a country's economic output through their effects on educational achievement and skills acquisition, labour productivity and decent employment, increased savings and investment, the demographic transition and impacts on the earth's ecosystem. Good health is thus an end in itself and it plays an integral part in human experiences and well-being.

A healthy population is a vital for economic development. The poorest people on the planet tend to suffer most from the health effects from exposures to environmental hazards like air pollution and impure water. In turn, disease and disability related to polluted environments slows and blocks economic development. In addition to its toll on human suffering, illness carries a significant financial problem in the form of healthcare expenditures and lost productivity. For example, unhealthy often cannot attend or perform well in school, and unhealthy adults cannot work or care for their families.

1.1.1 Environmental Threats to Human Health

Climate change, together with other natural and human-made health stressors, influences human health and disease in numerous ways. Some existing health threats will intensify and new health threats will emerge. Not everyone is equally at risk. Important considerations include age, economic resources, and location.

In the U.S., public health can be affected by disruptions of physical, biological, and ecological systems, including disturbances originating here and elsewhere [6]. The health effects of these disruptions include increased respiratory and cardiovascular disease, injuries and premature deaths related to extreme weather events, changes in the prevalence and geographical distribution of food- and water-borne illnesses and other infectious diseases, and threats to mental health.



People experience the environment in which they live as a combination of physical, chemical, biological, social, cultural, and economic conditions that differ according to the local geography, infrastructure, season, time of day, and activity undertaken [7]. The different environmental health threats can be divided into "traditional hazards, which are related with lack of development, and the "modern hazards," which are associated with unsustainable development. [8] The changing pattern of environmental health hazards and associated health risks from traditional to modern with time and economic development has been called the "risk transition." [8-10]. This transition in risks occurs before the "epidemiologic transition," which is the term applied to the frequently observed shift in the relative importance of traditional (for example, infectious) and modern (for example, chronic) diseases that accompanies development [8].

Traditional hazards are related to poverty and insufficient development. They include lack of access to safe drinking water; inadequate basic sanitation in the household and the community; food contamination with pathogens; indoor air pollution from cooking and heating using biomass fuel or coal; inadequate solid waste disposal; occupational injury hazards in agriculture and cottage industries; natural disasters, comprising floods, droughts, and earthquakes; and disease vectors, mainly insects and rodents. Modern hazards are related to rapid development that lacks health and environment safeguards and to unsustainable consumption of natural resources [9]. These hazards include water pollution from populated areas, industry, and intensive agriculture; urban air pollution from automobiles, coal power stations, and industry; solid and hazardous waste accumulation; chemical and radiation hazards due to introduction of industrial and agricultural technologies; emerging and re-emerging infectious disease hazards; deforestation, land degradation, and other major ecological change at local and regional level; climate change; stratospheric ozone depletion; and trans boundary pollution [10].

1.1.2 Children's Environmental Health

Children and infants are especially vulnerable to pollution and other environmental factors that may cause serious health problems. There are several reasons why children are at higher risk:

- Pound for pound, children eat, drink, and breathe more than adults relative to their size.
- Children frequently put objects in their mouths, explore more, and play on the floor and ground.
- Protective bodily systems, such as those that filter pollutants from inhaled air and process chemicals in the body, are not yet fully functional in children.
- During periods of rapid growth and development in childhood, normal biological processes may be disrupted by environmental chemicals.

Doctors and scientist do not always know what causes a disease or a disorder. Some health conditions are genetic and can be passed from grandparents to parents to children. Some health problems may be caused by injury from things in our environment. Most scientists agree that diseases are probably caused by both, which is called the gene-environment interaction. Since we cannot do much to change our genes, researchers believe that identifying and managing environmental hazards offers the best hope for prevention [11].

By protecting children, we may also improve their health as adults. According to NIEHS research, when pregnant women improved their nutrition and reduced exposure to environmental chemicals, they were more likely to have healthy babies, and their babies were better able to cope with environment stressors later in life.

1.2 Environment

Humans interact with the environment constantly. These interactions affect quality of life, years of healthy life lived, and health disparities. The World Health Organization (WHO) describes environment, as it relates to health, as “all the physical, chemical, and biological factors external to a person, and all the related behaviors.”[World Health Organization, 2006][27]. Environmental health consists of avoiding or controlling disease, injury, and disability related to the interactions between people and their environment. The Healthy People 2020 Environmental Health objectives focus on 6 themes, each of which highlights an element of environmental health:

1. Outdoor air quality

2. Surface and ground water quality
3. Toxic substances and hazardous wastes
4. Homes and communities
5. Infrastructure and surveillance
6. Global environmental health

Creating healthy environments can be complex and relies on continuing research to better understand the effects of exposure to environmental hazards on people's health [29].

1.2.1 Why Is Environmental Health Important?

- Maintaining a healthy environment is central to increasing quality of life and years of healthy life. Globally, 23% of all deaths and 26% of deaths among children under age 5 are due to preventable environmental factors. [World Health Organization, 2006].
- Environmental factors are diverse and far reaching. They include:
 - Exposure to hazardous substances in the air, water, soil, and food
 - Natural and technological disasters
 - Climate change
 - Occupational hazards
 - The built environment

The following related areas are:-

- Cancer
- Heart Disease and Stroke
- Occupational Safety and Health
- Physical Activity
- Respiratory Diseases

Poor environmental quality has its greatest impact on people whose health status is already at risk. Therefore, environmental health must address the societal and environmental factors that increase the likelihood of exposure and disease [12].

1.2.2 Emerging Issues in Environmental Health

Environmental health is a dynamic and evolving field. While not all complex environmental issues can be predicted, some known emerging issues in the field include:

- ***Climate Change***

Climate change is projected to impact sea level, patterns of infectious disease, air quality, and the severity of natural disasters such as floods, droughts, and storms.[Patz J, Campbell-Lendrum D, Holloway T, et al,2005 and Kinney PL,2008]

- ***Disaster Preparedness***

Preparedness for the environmental impact of natural disasters as well as disasters of human origin includes planning for human health needs and the impact on public infrastructure, such as water and roadways. [Noji E, Lee CY. Disaster preparedness, 2005].

- ***Nanotechnology***

The potential impact of nanotechnology is significant and offers possible improvements to:

- ❖ Disease prevention, detection, and treatment
- ❖ Electronics
- ❖ Clean energy
- ❖ Manufacturing
- ❖ Environmental risk assessment
- ❖ However, nanotechnology may also present unintended health risks or changes to the environment.[Bhattacharya K, Mukherjee SP, Gallud A, et al.,2016].

- ❖ ***The Built Environment***

Features of the built environment appear to impact human health—influencing behaviors, physical activity patterns, social networks, and access to resources.[Jackson R, Dannenberg A, Frumkin H,2013].

- ***Exposure to Unknown Hazards***

Every year, hundreds of new chemicals are introduced to the U.S. market. It is presumed that some of these chemicals may present new, unexpected challenges to human health, and their safety should be evaluated prior to release [13].

These cross-cutting disputes are not yet assumed well enough to inform the development of systems for measuring and tracking their impact. Further exploration is warranted. The environmental health

landscape will continue to evolve and may present opportunities for additional research, analysis, and monitoring.

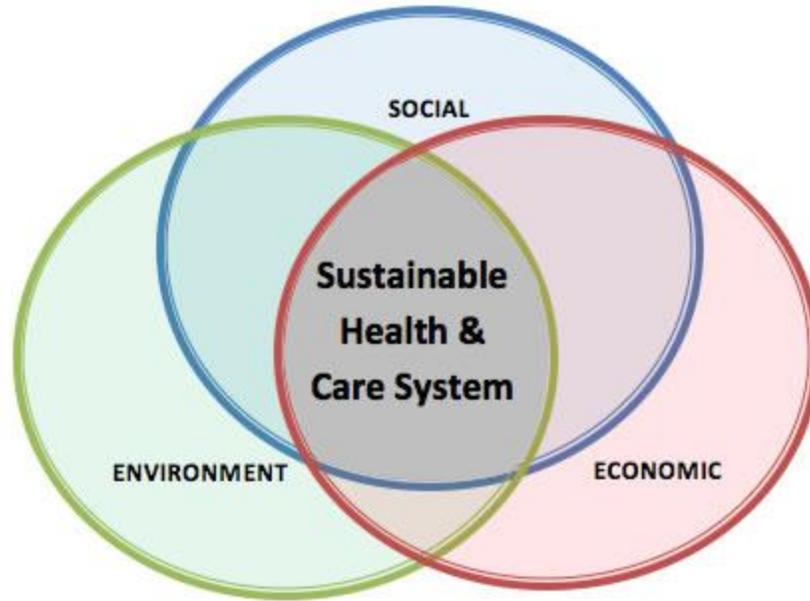
- ***Blood Lead Levels***

Such as 2017, there are approximately 4 million houses or buildings that have children living in them who are possibly being exposed to lead. Nearly half a million U.S [26]. children ages 1 to 5 have blood lead stages at or above 5 micrograms per deciliter ($\mu\text{g/dL}$), which is currently the reference level at which CDC recommends public health actions be taken. Even blood lead exposure levels as low as 2 micrograms per deciliter ($\mu\text{g/dL}$) can affect a child's cognitive function. Since no safe blood lead levels have been identified for children, any exposure should be taken seriously [14]. Though, since lead exposure often follows with no evident signs or symptoms, it often remains unrecognized. CDC's Childhood Lead Poisoning Prevention Program is committed to the Healthy People 2020 goals of eliminating childhood lead exposures and decreasing disparities in the differences in average risk of lead exposure based on race and social class as public health concerns.

1.3 Sustainable development and Sustainable Health

Sustainable development is often defined as development that meets the needs of current generations without cooperating the ability of future generations to meet their own needs. As per evidence of the harm to health and well-being from extensive environmental degradation and global climate change grows, communities and controls are placing greater emphasis on assuring that economic development is achieved in a sustainable way [15].

It is laidback to imagine a sustainable health and care system – it goes on repeatedly within the limits of financial, social and environmental resources. The experiment is the current approach to providing health and care cannot continue in the same way and stay within these limits [22].



A sustainable health and care scheme is achieved by providing high quality care and improved public health without strenuous natural resources or causing severe ecological damage [25]. It may also be valuable to consider about the relationship between sustainability and health in three different ways moving from a slight focus to a broad focus [16]. The resources and guidance on this website focus on points 1 and 2.

A sustainable health and care system:

1 - Sustainable Health and Care Sector

This includes ‘greening’ the sector with particular attention to energy, travel, waste, procurement, water, infrastructure adaptation and buildings. These make sure resources (physical, financial and human) used in the sector are:

- Used proficiently (e.g. constructions and home environment are well insulated and use less fuel to heat)
- Used correctly (e.g. medical waste is disposed of securely to protect local people)

2 - Sustainable Health Care

This is somewhat broader (but more health care specific) than point 1 and involves working through the health system and associates to deliver health care that bring on the triple bottom line i.e. simultaneous financial, social and environmental return on investment [17]. It includes adjusting how we deliver services, health promotion, more anticipation, corporate social responsibility and developing more

sustainable models of care.

3 - Sustainable Health & Well-being

This is the broadest level and involves considering the sustainability of everything that impact on health and well-being (e.g. education, farming, banking etc).

1.3.1 How does economic development affect environmental health?

Economic development has controlled to great improvements in people's well-being, but often at the expense of the environment. Industrialization has contributed to pollution of air and water, changing dietary patterns, and shifting patterns of transportation and land use. Exposures to air and water waste product directly increase disease. Likewise, nutritional changes and reduced levels of physical activity, resulting from transportation and other work and lifestyle changes, are contributing to global epidemics of obesity, diabetes, and associated diseases [18]. Globalization and the large geographic scale over which rapid development is happening make these environmental health problems global health problems[24].

1.3.2 How can environmental health be integrated into sustainable development?

Keeping and generating healthy environments is a critical constituent of sustainable development. Environmental health can be included into sustainable development by:

- Effective environmental feature for the reduced populations with the extreme burden of environmental diseases, by reducing exposures to air pollution in homes and villages from biomass burning, and providing clean water and sanitation
- Identifying efforts to address environmental difficulties that can also provide health benefits. For example, generating environments that motivate biking and walking for transportation decreases greenhouse gas and toxic air pollution emissions (environmental benefit) and increases physical activity (health benefit)[19].
- Recognizing that some policies, practices, and technologies designed to promote sustainability and economic development may have unintended adverse environmental health effects, and attempting to prevent or mitigate these before they are implemented.

Conclusion

Environmental degradation poses a significant risk to human health worldwide. Harmful consequences of this degradation to human health are already being felt and could grow significantly worse over the next 50 years [Millennium Ecosystem Assessment, 2005]. Because environment and health are so closely linked, so too should be environmental and health procedures. However, health impacts are non-marketed and thus hard to quantify in monetary terms. The subsequent risk of being ignored in policy-making is a major concern worldwide. To address this challenge a number of valuation studies have been conducted in both developing and developed countries applying different methods to capture health benefits from improved environmental quality [22]. Valuation results are crucial for the formulation of economic instruments to internalize the externalities created by the public nature of environmental resources. Elicitations of the preferences and valuations of different social groups through valuations are therefore essential. This paper reviews the main literature in the field[20]. Although not exhaustive, applied research cited in this review provides substantial evidence of strong correlation between exposure to environmental hazards and health risks and reveals that there are significant values associated with longevity and health quality in both developed and developing world justifying the need for policy interventions.

Environment and development-related health effects are becoming of increasing concern world-wide, in both developing and developed countries. As problems become more complex and widespread, resources with which to tackle them are dwindling. New approaches needed to address the challenges must be based on integrated, holistic policy and planning mechanisms at all tiers of government, involving all relevant partners and sectors. In this connection, there is a clear need to improve information for policy- and decision-making, in order that it support the new ways of thinking and approaches to addressing cross-cutting problems. This document has attempted to lay the basis for the development and use of health and environmental indicators in sustainable development planning. It is emphasized that indicators are most effective if they are developed as part of the overall policy and planning process, whether this occurs at the national or the local level. More work is needed to evaluate the use and effectiveness of indicators in this regard [21].

In order to manage health, environment and development hazards more effectively in the future, decision-makers in various fields should develop and use appropriate indicators, so that the information provided is as useful and meaningful as possible for policy and planning at all levels. The public must also become more closely involved in indicator development and use.

References

1. Beaglehole R, Bonita R. Public health at the crossroads: achievements and prospects. Cambridge, United Kingdom: Cambridge University Press, 1997.
2. Bhattacharya K, Mukherjee SP, Gallud A, et al. Biological interactions of carbon-based nanomaterials: From coronation to degradation. *Nanomedicine*. 2016 Feb;12(2):333–51.
3. Commission of the European Communities. Green paper on the urban environment. Brussels, Office for Official Publications of the European Communities, p. 59 , 1990.
4. Constitution of the World Health Organization. In: WHO basic documents. 40th ed. Geneva, World Health Organization, 1994.
5. Five Years after the Earth Summit. Geneva: World Health Organization, 1997
6. Health for all. Global Strategy for Health for All by the year 2000. World Health Organization Geneva 1981.
7. Health for all targets – the health policy for Europe. Copenhagen, WHO Regional Office for Europe, (European Health for All Series, No. 4) 1991.
8. Jackson R, Dannenberg A, Frumkin H. Health and the Built Environment: 10 Years After. *Am J Public Health*. 2013 September;103(9):1542–44.
9. Kinney PL. Climate change, air quality, and human health. *Am J Prev Med*. 2008 Nov;35(5):459-67
10. Litsios S. Sustainable development is healthy development. *World Health Forum* 1994;15:193-195.
11. McKeown T. The Role of Medicine: Dream, Mirage or Nemesis? London: Nuffield Provincial Hospitals Trust, 1976
12. Millennium Ecosystem Assessment. Ecosystems and Human Well-Being: Synthesis. Island Press, Millennium Ecosystem Assessment Series; Washington, DC, USA: 2005
13. Myradal, G., Asian Drama: An Enquiry into the poverty Nations, Vol. I, Twentieth Century Fund, New York, 1968.

14. Newman, Summer, and Warren, The Process of Management, Prentice Hall, Englewood Cliffs, N. J., p.10, 1967.
15. Noji E, Lee CY. Disaster preparedness. In: Frumkin H, editor. Environmental health, from global to local. 1st edition. San Francisco: Jossey-Bass; 2005.
16. Our planet, our health. Report of the WHO Commission on Health and Environment. Geneva, World Health Organization, 1992.
17. Patz J, Campbell-Lendrum D, Holloway T, et al. Impact of regional climate change on human health. Nature. 2005 Nov 17;438(7066):310-17.
18. Preeclampsia May Harm Children's Brain Development (May 2020)
19. The World Bank. Investing in health. New York, Oxford University Press, 1993.
20. Treaty on European Union. Luxembourg, Office for Official Publications of the European Communities, 1992.
21. United Nations. Agenda 21: the United Nations programme of action from Rio. New York: United Nations, 1993.
22. U.S. Environmental Protection Agency, Office of Air Quality Planning and Standards. Our Nation's air: Status and trends through 2008. Washington, DC: EPA; 2010.
23. Warford JJ. Environment, health and sustainable development: the role of economic instruments and policies. Bull World Health Organ 1995; 73:387-395.
24. World Commission on Environment and Development. Our common future. Oxford, Oxford University Press, 1987
25. World Health Organization. Health and Environment in Sustainable Development:
26. World Health Organization Preventing disease through healthy environments: Towards an estimate of the environmental burden of disease.
27. WHO. Preamble to the Constitution of the World Health Organization as adopted by the International Health Conference, New York, and 19-22 June, 1946; signed on 22 July 1946 by the representatives of 61 States (Official Records of the World Health Organization, no. 2, p. 100) and entered into force on 7 April 1948.
28. World Health Organization. Preventing disease through healthy environments. Geneva, Switzerland: WHO; 2006.