

INTRODUCTION

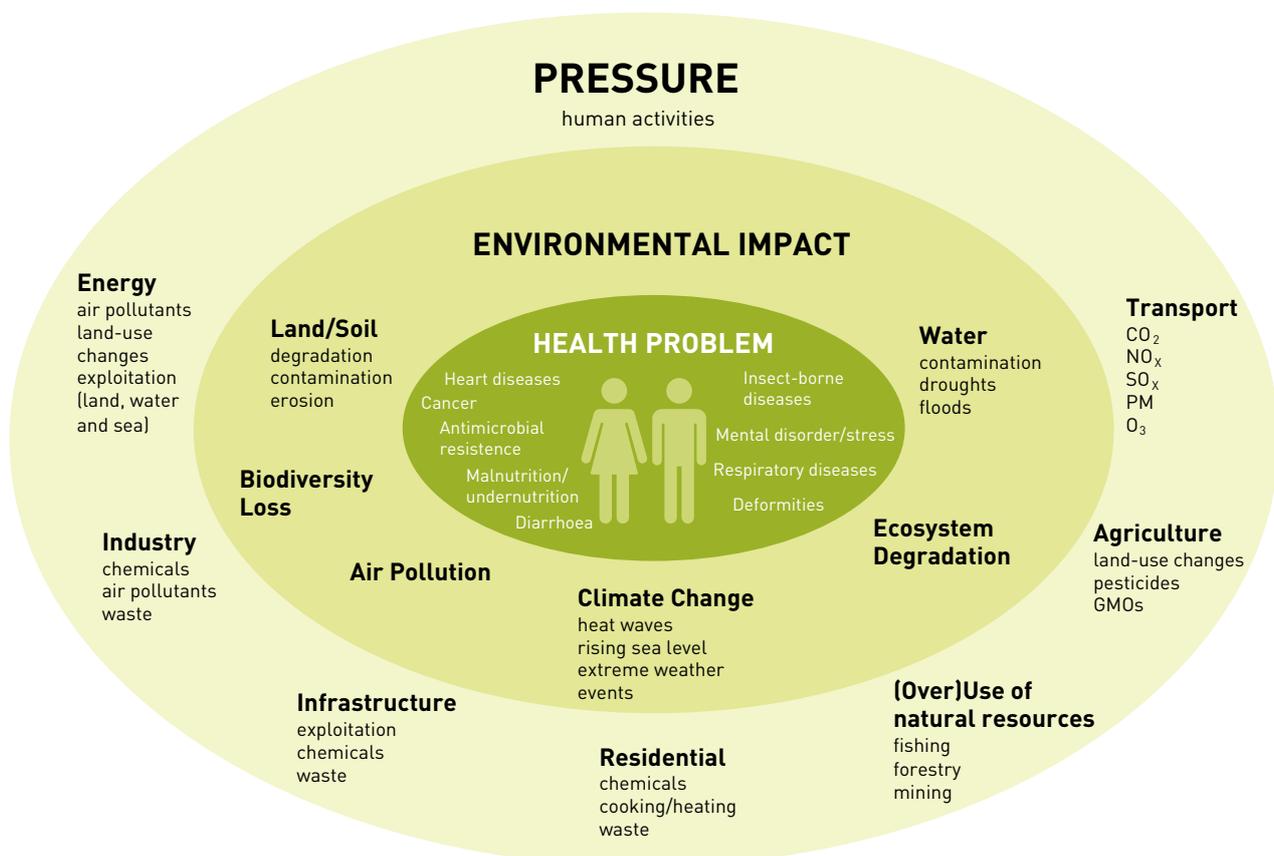
The human-induced negative impact on the environment results in death, diseases and injuries, impacting the quality of life, reducing productivity, and burden the health systems. The impact is unevenly distributed and effects poor people, already living under vulnerable conditions, even worse since they depend more directly on natural resources and services that nature provides for their wellbeing.

Hence, a healthy environment will contribute to both improved health, poverty reduction and economic and social development. The interlinkages are indeed complex and differs depending on region in the world, between

urban and rural areas, between coast and inland, etc., but the overall message is simple: how the environment is managed and used has a clear and obvious impact on the health of present and future generations¹. However, more research is needed to better understand, monitor, prevent and respond to existing and emerging environmental risks to health².

This brief aims to highlight some of the linkages between health, environment and climate change that could be relevant for consideration in the management of Sida-supported programmes and among Sida's partner organisations.

Figure 1: Illustration of the interlinkages between environmental impacts, caused by different pressures, and health problems (not exhaustive). *Source: Sida's Helpdesk on Environment and Climate Change.*



1 Healthy environments for healthier populations: Why do they matter, and what can we do? WHO, 2019
 2 Health, environment and climate change, OECD, 2019

From longstanding to emerging hazards, environmental problems are a root cause of a significant burden of death, disease and disability – particularly in developing countries³. Disadvantaged communities are the most vulnerable and have the least resources to respond to environmental degradation and climate change health threats. For example, the risk of being affected by weather-related natural disasters is almost 80 times higher in developing countries than in developed countries.⁴

Known avoidable environmental risks to health cause at least 12.6 million deaths every year, and account for about one quarter of the global burden of disease. Pollution is the world’s largest environmental cause of disease and premature death and nearly 92% of pollution-related deaths occur in low-income and middle-income countries⁵. In sub-Saharan Africa nearly 35% of death and diseases are linked to human caused/driven environmental factors⁶. This includes environmental threats in the work, home and broader community/living environment.

Children face the highest risks since even limited exposure to chemicals in unborn and in early childhood can result in lifelong disability and premature death, as well as reduced learning and earning potential. In 2015, 26% of the deaths of 5.9 million children under the age of five could have been prevented through addressing environmental risks.⁷

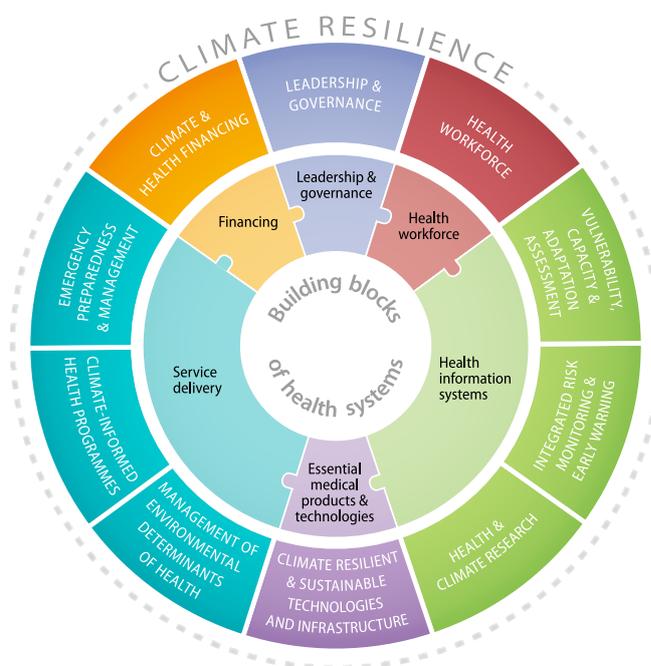
Environmental risks take a great toll on elderly people. Yearly, the deaths of 4.9 million elderly people could be prevented through better environmental management. Elderly people are the most affected by noncommunicable diseases (NCDs), mostly attributable to air pollution.⁸

The environmental and health linkages also have a gender dimension. For example, in rural areas indoor pollution affects women more than men, as they are more exposed to smoke from burning fuels⁹. In agricultural communities in developing countries, men may be at higher risk of direct exposure to chemical pesticides during application, while women may be more likely to be indirectly exposed during planting and harvesting¹⁰.

Outdoor working conditions will also have implications on health. For example, in the infrastructure and construction sector, workers are experiencing the health effects of higher temperature, in combination with changes in precipitation patterns, climate extremes and the effects of air pollution, which will have a potential negative impact on their safety and wellbeing.¹¹

Environmental impacts and climate change will also have great implications, and put pressure, on health systems. Climate change events such as floods, heat waves and other extreme weather events will increasingly test the resilience of health systems to respond to shocks – which is especially problematic in fragile and conflict affected states where health systems are already stretched. Moreover, increases in noncommunicable diseases (NCDs) linked to environmental degradation is only set to grow the demand for healthcare over time. Building resilient- and people centered health systems able to cope with these increased demands requires both increased climate change mitigation measures as well as investments towards reaching Universal Health Coverage (UHC) to ensure (continued) access to care for all.¹²

Figure 2: All health systems share common building blocks. The figure shows the 10 components for building climate-resilient health systems within these building blocks. Source: WHO.



3 <https://www.who.int/heli/risks/en/>

4 Walpole, Rasanathan and Campbell-Lendrum (2009). Bulletin of the WHO 2009;87:799-801

5 <http://www.who.int/en/news-room/detail/15-03-2016-an-estimated-12-6-million-deaths-each-year-are-attributable-to-unhealthy-environments>

6 <https://www.who.int/heli/risks/en/>

7 Inheriting a sustainable world? Atlas on children’s health and the environment, WHO, 2017

8 <https://www.who.int/en/news-room/detail/15-03-2016-an-estimated-12-6-million-deaths-each-year-are-attributable-to-unhealthy-environments>

9 Gender and the Environment, Sida, 2016

10 Chemicals and gender, UNDP

11 <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6765781/>

12 <https://www.ncbi.nlm.nih.gov/books/NBK525226/>

The coronavirus (COVID-19) pandemic in 2020 highlights the need for a comprehensive and integrated approach to human health. Enhancing environmental health through better air quality, waste management and water and sanitation, along with efforts to safeguard biodiversity, will reduce the vulnerability of communities to pandemics and thus improve overall societal well-being and resilience. Exposure to ambient and indoor air pollution increases the risk of cardiovascular, respiratory and developmental diseases, as well as premature death, and make individuals more vulnerable to viruses such as COVID-19. Water access and quality and biodiversity and wildlife (illegal and uncontrolled trade of live wild animals) protection are key to battling the spread of pandemics, while effective waste management is essential to minimize possible secondary impacts upon health and the environment.¹³

On the policy level the interlinkages between environment, climate change and health have in recent years received increased global attention. The 2030 Agenda for Sustainable Development provides a new approach to health, environment and equity. It interlinks socioeconomic development with environmental protection, health and wellbeing, which provides overall support for tackling health determinants in a preventive and sustainable way rather than repeatedly dealing with post-exposure and adverse impacts and inequalities¹⁴.

Figure 3: Sustainable development Goals and environment-health links.
Source: WHO.



13 Environmental health and strengthening resilience to pandemics, OECD, 2020

14 WHO global strategy on health, environment and climate change: the transformation needed to improve lives and well-being sustainably through healthy environments, 2018

In September 2019 the UN adopted the Political Declaration on Universal Health Coverage (UHC), the most comprehensive set of health commitments ever adopted at global level. It states the importance to *“Recognize the consequence of the adverse impact of climate change, natural disasters, extreme weather events as well as other environmental determinants of health, such as clean air, safe drinking water, sanitation, safe, sufficient and nutritious food and secure shelter, for health and in this regard underscore the need to foster health in climate change adaptation efforts, underlining that resilient and people-centered health systems are necessary to protect the health of all people, in particular those who are vulnerable or in vulnerable situations, particular those living in small island developing states.”*¹⁵

KEY ENVIRONMENTAL ASPECTS IMPACTING HUMAN HEALTH

Figure 1 in the *Introduction* gives an overview of the many and complex interlinkages between environmental degradation and health problems hindering social and economic development, especially in the least developed countries and hitting the most vulnerable the hardest. Some of these environmental aspects, with clear and well-known researched interlinkages to health, are further described on a general level below.

Loss of Biodiversity and Ecosystem Services

Biodiversity and ecosystem services are essential for human existence and good quality of life¹⁶. Well-functioning ecosystems support human health by providing for example food/feed, clean air and water¹⁷. Biodiversity and ecosystem services provide nature-based solutions which protect and restore natural and modified ecosystems that addresses societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits.

Biodiversity is also directly linked to health and the health system as an estimated 50,000–70,000 plant species are harvested for traditional or modern medicine, and around 50% of modern drugs are developed from natural products¹⁸. Biodiversity also contributes to non-material aspects of quality of life such as inspiration and learning, physical and psychological experiences, and supporting identities that are central to quality of life and cultural integrity¹⁹.

While some loss of biodiversity is normal, the current rate is estimated to be about 1000 times higher than natural background rates.²⁰ This loss is largely human-caused, driven by for example over-exploitation through fishing and hunting, conversion of forests and other ecosystems for agriculture, infrastructure and urban development, as well as climate change.

There is also increasing evidence that overexploitation of nature is one of the factors behind the spread of new diseases. For example, changes in land use that bring wildlife, livestock and humans into closer contact with each other as well as illegal and uncontrolled trade of live wild animals, create conditions for and facilitate the development and spread of diseases. In particular zoonoses, infectious diseases that can be transmitted from animals to humans, such as Avian Flu or the coronavirus pandemic in 2020 (COVID-19) caused by harmful viruses, bacteria, parasites, and/or fungi, are likely to increase.²¹

There is a rather large uncertainty about the health impacts of loss of biodiversity and ecosystem services, but the existing evidence shows that increased loss will challenge the ability to achieve many development priorities including health, especially in the context of a changing climate.

The health implications include for example loss of access to both terrestrial and marine wildlife for food. The decline in insect pollination population will also have a devastating effect on food availability. Biodiversity loss is likely to lead to reduced access to traditional medicines, reduced options for future drug development, increased disease burden and reduced protection against pollution as the ecological barriers are weakened.²²

Loss of biodiversity and ecosystem services occurs in all regions where Sida operates, but are of particular importance in Latin America, Africa and Asia.

Air pollution

It is estimated that 7 million people die every year as a result of ambient (outdoor) and household air pollution. Ambient air pollution caused some 4.2 million deaths globally in 2016²³. In addition, indoor smoke is a serious health risk for some 3 billion people who cook and heat their homes with biomass, kerosene fuels and coal. These practices caused an estimated 3.8 million deaths – most of them women and children – in the same period.²⁴

15 Political Declaration of the High-level Meeting on Universal Health Coverage “Universal Health Coverage: Moving Together to Build a Healthier World” 2019

16 The IPBES Global Assessment Report on Biodiversity and Ecosystem Services, IPBES, 2019

17 Global Status Report on Noncommunicable Diseases 2010, WHO, 2011

18 Mnookin, S. 2016. “Out of the Shadows: Making Mental Health a Global Development Priority”.

19 The IPBES Global Assessment Report on Biodiversity and Ecosystem Services, IPBES, 2019

20 Pimm, (2014) The biodiversity of species and their rates of extinction, distribution, and protection. Science

21 <https://www.panda.org/?361716>

22 Roe, Seddon and Elliott (2019) Biodiversity loss is a development issue: IIED, London.

23 [https://www.who.int/en/news-room/fact-sheets/detail/ambient-\(outdoor\)-air-quality-and-health](https://www.who.int/en/news-room/fact-sheets/detail/ambient-(outdoor)-air-quality-and-health)

24 WHO Fact sheet Ambient air pollution

WHO recognizes that air pollution is a critical risk factor for noncommunicable diseases (NCDs), causing an estimated 25% of all adult deaths from heart disease, 24% from stroke, 43% from chronic obstructive pulmonary disease, 17% of acute lower respiratory disease and 29% from lung cancer. Pollutants with the strongest evidence for public health concern include particulate matter, ozone, nitrogen dioxide and sulphur dioxide.²⁵

In 2017, the share of deaths attributed to air pollution across the world ranged from a low of 2% across high-income countries, to close to 15% across many countries in South and East Asia (e.g. 11.1% in Myanmar, 13.8% in Bangladesh)²⁶. Hence, it could be especially relevant to address air pollution in Sida contributions in Asia. In Europe, the mortality rates due to air pollution are highest in Central and Eastern Europe.²⁷

Figure 4. Air pollution is the silent killer.
Source: WHO.



Available data shows that 91% of the world's population are breathing air containing high levels of pollutants and that air quality in these areas does not comply with the WHO air quality guideline values²⁸. According to the latest urban air quality database, 98% of cities in low- and middle income countries with more than 100 000 inhabitants do not meet

WHO air quality guidelines²⁹. The highest ambient air pollution levels are in the Eastern Mediterranean Region and in South-East Asia, with annual mean levels often exceeding more than five times WHO limits, followed by low and middle-income cities in Africa and the Western Pacific.³⁰

The burning of fossil fuels accounts for 2/3 of outdoor air pollution and globally, fossil-fuel-related emissions account for about 65% of the excess mortality of cardiovascular, respiratory and other diseases³¹. Hence, cutting down the use of fossil fuel is imperative to limit climate change effects on the environment, reduce air pollution and ease the global burden of disease. WHO has estimated that the health gains from reduced air pollution are higher than the mitigation costs, indicating long-term economic benefits from taking action³². Reducing air pollutants is considered by WHO to be the single most important measure to improve global health³³.

Inadequate chemical and solid waste management

Chemicals are an integral part of today's world, including in developing countries, and contribute in many ways to improved standards of living³⁴. At the same time, use of chemicals can result in serious adverse effects on the environment and pose a huge threat to human health leading to disease, illness or death by poisoning.

Hazardous chemicals can be found in the air, in food, in consumer products, at the workplace, in water, and in soil and can cause a large variety of diseases. Many conditions such as mental, behavioral and neurological disorders, adverse pregnancy outcomes, cataracts, and asthma could be prevented by reducing or removing chemical exposure³⁵.

There is an established link between poverty and the increased risk of exposure to toxic and hazardous chemicals³⁶. Changing patterns of consumption have led to increased chemical production and use in developing countries, along with increased exposures. This development of production and consumption of chemicals often occurs against a backdrop of insufficient infrastructure to protect public health and the environment adequately³⁷. Impacts of inadequate chemical and solid waste management are to some extent relevant in all regions of Sida's

25 <https://www.who.int/airpollution/ambient/health-impacts/en/>

26 <https://ourworldindata.org/air-pollution#air-pollution-is-one-of-the-world-s-leading-risk-factors-for-death>

27 OECD (2016), The Economic Consequences of Outdoor Air Pollution, OECD Publishing, Paris, <https://www.oecd.org/environment/indicators-modeling-outlooks/Policy-Highlights-Economic-consequences-of-outdoor-air-pollution-web.pdf>

28 [https://www.who.int/news-room/fact-sheets/detail/ambient-\(outdoor\)-air-quality-and-health](https://www.who.int/news-room/fact-sheets/detail/ambient-(outdoor)-air-quality-and-health)

29 WHO Air Quality Database. https://www.who.int/phe/health_topics/out-doorair/databases/cities/en/

30 <https://www.who.int/news-room/detail/02-05-2018-9-out-of-10-people-worldwide-breathe-polluted-air-but-more-countries-are-taking-action>

31 Lelieveld, Klingmüller, Pozzer, Burnett, Haines and Ramanathan. PNAS April 9, 2019 116 (15) 7192-7197

32 WHO Webinar: Special Event on Health & Climate Change. WHO, Geneva, 30 January 2020.

33 Ambient Air Pollution: A global assessment of exposure and burden of disease, WHO, 2016

34 Our Planet: Healthy People, Healthy Planet, UNEP, 2015

35 Healthy environments for healthier populations: Why do they matter, and what can we do? WHO, 2019

36 Chemicals and gender, UNDP

37 How Developing Nations Can Protect Children From Hazardous Chemical Exposures While Sustaining Economic Growth, Health Affairs (2011), Trasande, Massey, DiGangi, Geiser, Olanipekun, Gallagher.

operations but it is very relevant to consider for operations in Latin America, Asia and Africa.

Exposure of poor people to toxic chemicals is often strongly correlated to geography. For example, low-income or marginalized populations in urban settings typically reside in neighborhoods considered undesirable, such as areas adjacent to industrial zones. These places can be major sources of environmental exposure to toxic chemicals, originating from factories, landfill sites, incinerators, and/or hazardous waste dumps.

In rural areas, where three-quarters of the world's poor live, most chemical exposure is linked to pollution brought by polluted water sources as well as the use of pesticides in agriculture³⁸. The improper use, management, and storage of pesticides and chemical fertilisers can result in contamination of air, food, soil, and drinking water.

With rapid population growth, urbanization and changes in consumption patterns, annual waste generation is expected to increase by 70% from 2016 levels to 3.40 billion tons in 2050³⁹. It is reported that more than 70% of urban waste in developing countries is collected and disposed inappropriately⁴⁰ having severe impacts on especially the urban poor.

The implications of poorly managed waste on health are numerous and depend on the nature of the waste, individuals exposed, duration of exposure and availability of interventions for those exposed. Poorly managed waste also serves as a breeding ground for disease vectors and contributes to global climate change through methane generation.

Three sectors of particular interest in relation to health and waste is the health care system itself, the pharmaceutical pollution and the growing one of e-waste. The health care system produces large amounts of solid waste including drugs and pharmaceuticals, disposable medical devices, cleaning products, and more. It is estimated that 15% of the waste generated by health-care activities is considered hazardous material that may be infectious, chemical or radioactive⁴¹, but the proportion can rise to 70% when hospitals fail to separate hazardous waste⁴².

Pharmaceutical pollution is increasingly recognised as a threat to ecosystems and human health globally. Pharmaceutical manufacturing is a source of pharmaceutical pollution that is partly caused by poorly enforced environmental legislation in countries such as India and China. Hospitals and other health care facilities are also pollution

sources. The discharge of pharmaceuticals into the environment has also been linked to the development of antimicrobial resistance (AMR), which is recognised by UNEP as one of the threats on human health.⁴³

The amount of electrical and electronic waste (e-waste) produced is growing. Recycling of valuable elements contained in e-waste has become a source of income in the informal sector of developing or emerging industrialized countries⁴⁴. Primitive recycling techniques expose, both adult and child workers as well as their families, to a range of hazardous substances resulting in health risks from direct contact or indirectly by contaminated soil and water.⁴⁵

Water and Sanitation

Water is essential for all living things on earth and is fundamental to human health and wellbeing⁴⁶. However, several implications are contributing to negatively impacting water ecosystems and supplement of drinking water. Climate change, including increased variability of rainfall causing floods and droughts, and pollution caused by agricultural run-off, industrial discharge and untreated sewage are resulting in degraded water ecosystems and loss of ecosystem services with effects on human health. To improve water quality and ensure sufficient access to clean water it is crucial to reduce pollution, including GHG emissions, to limit climate change effects and improve wastewater management⁴⁷.

Gaps in access to water supply and sanitation, growing populations and more water-intensive patterns of growth are putting further pressure on water resources and thus on public health. These effects are in many places combined making lack of access to water one of the greatest risks to effective poverty eradication, health improvements and sustainable development⁴⁸.

It is estimated that some 2.2 billion people do not have safely managed drinking water services, 4.2 billion people do not have safely managed sanitation services, and 3 billion lack basic handwashing facilities⁴⁹. While open defecation has been halved between 2000 to 2017 globally, the number of people openly defecating has increased in 39 countries, the majority of which are in sub-Saharan Africa. However, the greatest increase in access to at least basic drinking water was recorded in Sub-Saharan Africa in the same period. Oceania had the lowest baseline coverage in 2000 and recorded the smallest increase among regions with less than 99% coverage.

38 Chemicals and gender, UNDP

39 <https://www.worldbank.org/en/topic/urbandevelopment/brief/solid-waste-management>

40 <https://archpublichealth.biomedcentral.com/articles/10.1186/s13690-016-0166-4>

41 <https://www.who.int/en/news-room/fact-sheets/detail/health-care-waste>

42 Ibid.

43 <http://saferpharma.org/news/pharmaceutical-industry-ignoring-environmental-protection/>

44 <https://www.who.int/ceh/risks/ewaste/en/>

45 Ibid.

46 <https://www.government.se/country-and-regional-strategies/2018/06/strategy-for-swedens-global-development-cooperation-in-the-areas-of-environmental-sustainability-20182022/>

47 <https://www.unwater.org/water-facts/quality-and-wastewater/>

48 <https://www.unwater.org/water-facts/>

49 <https://www.worldbank.org/en/topic/water/overview>

Globally, 80% of wastewater flows back into the ecosystem without being treated or reused, contributing to a situation where around 1.8 billion people use a contaminated source of drinking water.⁵⁰

These deficient conditions expose women, men and children to a range of diseases, including cholera, malaria, trachoma, schistosomiasis, worm infestations and guinea worm disease⁵¹ having an immense impact on their health. For those with compromised immune systems such as small children, malnourished and people living with HIV, this could result in death. A significant amount of disease could be prevented through access to safe water supply, adequate sanitation services and better hygiene practices. This in turn creates possibilities to reduce use, misuse and overreliance of antibiotics and hence, reduce spreading of antimicrobial resistance (AMR)⁵².



Woman carrying water in India. Photo: Daniel Bachhuber.

Women and children are disproportionately affected by a lack of access to water, sanitation and hygiene (WASH), and shoulder the largest burden in water collection worldwide. Addressing the WASH needs of women and children can provide direct and indirect benefits to the entire community, including health.⁵³

WASH-related challenges are relevant in many of the countries and regions that Sida operates in but given the development above during the last 20 years, it could be particularly pertinent in Africa.

Climate change

The risks associated with climate-related disasters are already a reality for millions of people around the globe. Climate change is a multiplying factor, putting further pressure on the environment and ecosystems by accelerating already existing environmental impacts resulting in increased stress on human health.

Climate change induced environmental impacts include heat waves, seasonal changes in precipitation and temperatures, extreme weather events (floods, droughts, storms etc.); polluted air, water and soil; degraded ecosystems and biodiversity loss; water scarcity and rising sea levels, that will result in different health impacts. Climate change undoubtedly poses many different risks to human health, both directly (e.g. droughts causing malnutrition due to decreased harvests) and indirectly⁵⁴ (e.g. increase of Gender Based Violence among displaced populations following extreme weather events⁵⁵).

There are strong linkages between climate change, air pollution and health. Burning of fossil fuels for power, transport and industry is the main source of carbon emissions but also a major contributor to health damaging air pollution. Air pollution is considered the largest environmental health risk causing high number of deaths yearly⁵⁶. For instance, increased levels of ozone and other pollutants in the air as well as pollen and other aeroallergen levels due to higher temperature, worsen cardiovascular and respiratory diseases.

Furthermore, rising temperatures in combination with variable precipitation, drought and water scarcity or floods, will affect agriculture and are likely to decrease the production of staple foods in many of the poorest regions. Rising temperature, acidification and decreased primary production in the ocean may lead to depleted fish stocks jeopardizing food security for poor coastal communities⁵⁷.

Rising sea levels could also have implications on fresh water supplies, cause coastal erosion and lead to population displacement, which in turn increase the risk of a range of health effects, from mental disorders to communicable diseases. Deteriorated agriculture and declining fish stocks and other aquatic resources in marine as well as fresh water will have significant impact on food security and increase the prevalence of malnutrition and undernutrition.

Increasingly variable rainfall patterns are likely to affect the amount of available water resources and the quality of water. Floods causes drownings and physical injuries,

50 <https://www.unwater.org/water-facts/quality-and-wastewater/>

51 https://www.unicef.org/wash/index_healthandeducation.html

52 A. Macintyre et. al. "Prevention first: Tackling AMR through water, sanitation and hygiene". One Health. 2017. <http://resistancecontrol.info/2017/prevention-first-tackling-amr-through-water-sanitation-and-hygiene/>

53 <https://www.washadvocates.org/learn/wash-and-women-and-girls/>

54 McMichael AJ (2013). Impediments to comprehensive research on climate change and health. *Int J Environ Res Public Health*. 10:6096-105.

55 <https://www.uncclearn.org/sites/default/files/inventory/unwomen701.pdf>

56 COP 24 Special Report. Health & Climate Change, WHO, 2018

57 Sustainable fisheries and aquaculture for food security and nutrition. Summary and Rec. FAO, 2014.

damage homes and disrupt the supply of medical and health services. Furthermore, contaminated freshwater supplies increases the risk of water-borne diseases and create breeding grounds for disease-carrying insects such as mosquitoes. Vector borne diseases (diseases that are spread to humans through another organism by carrying a pathogen from one host to another) such as malaria, are estimated to cause 17% of the global burden of infectious diseases in the world and causes more than one million deaths a year⁵⁸.

Both vector borne diseases as well as zoonoses are climate sensitive and ecological shifts associated with climate change are expected to impact the distribution and incidences of these diseases⁵⁹. The incidence of mosquito-borne diseases, including malaria and dengue, are among those diseases most sensitive to climate. Climate change would directly affect disease transmission by shifting the vector's geographic range and increased reproduction as well as biting rates. Other infectious diseases that may have higher incidence due to climate change include water-borne infectious and toxin-related illnesses, such as cholera and shellfish poisoning due to increased water and sea surface temperature and sea level change.⁶⁰ Climate change also entails the spread of AMR. For instance, water scarcity worsen sanitation and hygiene conditions and increase concentration of pathogens while flooding risks contaminate land and water resources leading to increase of diseases. This will contribute to overuse and misuse of antibiotics in human and animal health encouraging the emergence and spread of antibiotic resistance as well as increasing AMR transmission.⁶¹ To manage public health risks at the human-animal-environment interface, such as vector borne diseases, zoonoses and AMR, adoption of a holistic, cross-sectoral and multidisciplinary One Health approach, recognizing that the health of people is closely connected to the health of animals and our shared environment, is needed.⁶²

Climate change may also have effects on sexual and reproductive health (SRH). Research implies that a warmer climate may have a direct negative impact on reproductive

factors such as sperm quality and menstrual cycles⁶³. Climate change can also cause effects by making it more difficult to visit health clinics and gain service and information due to floods, extreme heat etc.

WHO has assessed that climate change is expected to cause approximately 250 000 additional deaths per year between 2030 and 2050; 38 000 due to heat exposure, 48 000 due to diarrhoea, 60 000 due to malaria, and 95 000 due to childhood undernutrition.⁶⁴

Climate change challenges are many and extensive in all regions and countries where Sida contributions take place. However, Africa, Small Island Developing States and Asian mega-deltas are regions that are likely to be especially affected by future climate change and where support may be even more crucial.

CONCLUSIONS

There are many and complex linkages between health, environment and climate change but it is clear that human-induced negative impact on the environment results in death, diseases and injuries, impacting the quality of life, reducing productivity, and burden the health systems. Low-income countries are particularly exposed and disadvantaged communities are the most vulnerable and have the least resources to respond to environmental degradation and climate change. People living in poverty, in particular women and children, and unborn are among those disproportionately affected.

Given the implications caused by environmental degradation on human health, and the obstacles these pose to economic and social development, several interlinkages could be relevant for consideration in the management of Sida supported programmes and among Sida's partner organisations. Impacts are unevenly distributed and, depending on challenges and preconditions, differ between regions in the world, between urban and rural areas, coast and inland etc. and hence, need to be considered in aid contributions.

However, it is clear that enhancing environmental health through better air quality, access to water and sanitation, improved waste management and biodiversity safeguarding will reduce the vulnerability of communities and improve the overall societal well-being and resilience. Efforts for a sound environment will contribute to both improved health and poverty reduction.

58 <https://www.folkhalsomyndigheten.se/nyheter-och-press/nyhetsarkiv/2014/april/varldshalsodagen-i-ar-med-fokus-pa-insekter-som-sprider-sjukdomar/>

59 https://www.niehs.nih.gov/research/programs/geh/climatechange/health_impacts/vectorborne/index.cfm

60 Global Climate Change and Emerging Infectious Diseases, Jonathan A. Patz, JAMA

61 Tina Joshi, University of Plymouth. "Global challenges intertwined: how climate change is linked to antimicrobial resistance". World Antibiotic Awareness Week (WAAW) 2019.

62 <https://www.cdc.gov/onehealth/basics/index.html>

63 <https://theconversation.com/climate-changes-hotter-weather-could-reduce-human-fertility-50273>

64 Quantitative risk assessment of the effects of climate change on selected causes of death, WHO, 2014