

How WASH Supports Social Justice in a Changing Climate: The Importance of Water

Cómo WASH sustenta la Justicia Social en un clima cambiante: La importancia del agua

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Abstract

This paper explores the relationship between social justice, the water, sanitation, and hygiene (WASH) nexus, and the centrality of water to both, all within the context of climate change. Our changing climate has placed considerable pressure on the global hydrological system, altering traditional rainfall patterns and increasing the frequency and severity of natural disasters. Ensuring adequate and sustainable access to fresh water for communities around the world is essential for human life and health. The human right to health is seriously compromised when sanitation and hygiene services are inadequate. It is essential that these issues are included in discussions of social justice. In conclusion, the proposed solutions to address the needs of the WASH nexus and climate adaptation overlap. Climate adaptation itself is thus seen as a human rights concern and another facet of the social justice debate.

Keywords: sanitation, hygiene, health, climate justice, ecosystem services, water, human rights.

Summary: Introduction; Methodology; Social Justice, Climate Change and Climate Justice; WASH as Socially Just; Climate Change, Water and the WASH System; Discussion; Conclusions.

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Resumen

Este artículo analiza cómo se relaciona la justicia social con el agua, el saneamiento, la higiene (WASH) destacando el papel central del agua en estos enfoques, en el contexto del cambio climático. El clima varía y ha ejercido una presión considerable sobre el sistema hidrológico global, cambiando los patrones tradicionales de lluvia y aumentando la frecuencia y gravedad de los desastres naturales. Garantizar el acceso a agua dulce adecuada y sostenible para las comunidades del mundo es esencial para preservar la vida y la salud de las personas. El derecho humano a la salud se ve seriamente comprometido cuando los servicios de saneamiento e higiene son inadecuados o insuficientes. Por ello, es fundamental promover la inclusión de los grupos vulnerables en los debates sobre justicia social. En conclusión, las soluciones propuestas para abordar las necesidades del nexo WASH y la adaptación al cambio climático presentan importantes áreas de superposición. En este contexto, la adaptación climática se reconoce como una preocupación relacionada con los derechos humanos y como una dimensión del debate sobre la justicia social.

Palabras clave: saneamiento, higiene, salud, justicia climática, servicios ecosistémicos.

Introduction

What elements make a society *just* has been the purview of scholars, politicians, philosophers and poets for generations. Answers can be found in many religious traditions, cultural beliefs and legal doctrines. Commonalities include the alleviation of poverty and hunger, the establishment of freedom of belief, the unbiased application of the rule of law, the protection of individual health, the need for a sustainable environment, to live in peace and security, and for education to be available to all, amongst others. Essentially, a just society protects basic human rights and freedoms without prejudice. This idea is upheld by international Human Rights Law and other international instruments to be discussed throughout this paper. The concept of social justice takes these principles as the core of its ethos. This paper will investigate what needs to be at the core of social justice, and how the protection of the most basic of human rights, those of health, water, and sanitation, could be the key. Without these basic rights, there can be no growth, and other essential human rights can be undermined. Thus, the WASH nexus is potentially the most essential determinant to social justice. At the heart of WASH is water, a basic element without which there can be no life. Water, which touches every aspect of our lives, is also a basic human right. But “climate change is placing pressure on the global hydrological system and undermining the WASH nexus. To adapt to these changes, a social justice approach to WASH is needed, as well as the centering of water and social justice in the climate change discourse.

This study aims to investigate these key issues by focusing on overlaps within the nexus of WASH - climate change - social justice and identifying the embedded social justice elements in each distinct sub-section of the nexus, therefore unifying the narrative. The central questions to be addressed are as follows:

1. How do social justice and climate change relate? In a world experiencing the shifts brought about by a changing climate, how can we ensure the narrative of social justice is present in climate change talks and vice versa? Is Climate Justice at this intersection?
2. If the most basic human dignities are only assured when sufficient water, sanitation and hygiene are present, then how do we link each of these more closely to social justice and view them as essential to a just society?

3. At the core of WASH is water, without which the nexus cannot function. But in the face of climate change and the various pressures that water faces, how is water central then to the social justice discourse?

Methodology

This paper takes an interdisciplinary approach to its research, mixing qualitative and quantitative analysis:

- A literature review of relevant and current materials available on the intersection of the subjects of: water, sanitation, hygiene, health, climate change and social justice has been undertaken.
- A review of key international legal frameworks concerning the above key topics was required to ensure the relevance of discussion and suggestions.
- From an epistemological perspective, in-depth research into terms, such as justice and social justice, and how they are used was essential to the analysis of respected topics and to the production of a narrative that is cohesive.

Social Justice, Climate Change and Climate Justice

Social Justice, and its respective concerns, is generally accepted as placing human rights at the center of discussions, in a way that is non-discriminatory. At the national level, local level, and interpersonal level, it can also be framed as a term used to describe what is considered to be social justice. Thus, the meaning of social justice is dependent on the societal, religious, and organisational perspectives of those using the term. Social justice does not, then, have one concrete, agreed-upon definition, but many different, nuanced definitions that are heavily dependent upon the agenda of those instrumentalizing the notion. For example, an organisation such as the International Labour Organization (ILO), as its name suggests, focuses on fair and decent work as a way to ensure “Social Justice for a Fair Globalization.” The ILO adopted as a principal framework this concept in June 2008. In 1998, the United Nations declared that February 20th would be the World Day of Social Justice, and took yet another, broader approach to defining what social justice means. While we may not all agree on a single definition of Social Justice, we do, however, have international, and national legislature that establishes what is commonly accepted as socially just. Through the same mechanisms, most societies will be in agreement on the basic elements of what makes or is needed to establish a just society. This claim is supported by the adoption, ratification, and subsequent integration into national law of international human rights Conventions, International Labour Standards and other legally binding instruments. Conversely, for these international instruments to have been voluntarily accepted by so many States demonstrates that the basic substance of what makes a just society was fairly commonly acknowledged: a society that protects, implements and realizes human rights for all.

Of these universal human rights, to name but a few, are the right to life and a safe environment (Article 3 of the *Universal Declaration of Human Rights*), decent and fair work (Article 23 of the *Universal Declaration of Human Rights*), the rights of the child (Convention on the Rights of the Child 1989), the right to health (Article 25 of the *Universal Declaration of Human Rights*), the right to education (Article 26 of the *Universal Declaration of Human Rights*), and the right to clean water and improved sanitation (*Convention on the Law of the Non-navigational Uses of International Watercourses 1997*). However, not all of these rights were recognized at the same time, and in the majority of the world, the protection of all of them is still not guaranteed. The aim of social justice then (even without a unified definition), can be seen as the desire to ensure that these basic human rights are protected in the here and now and

without discrimination. But, what of the future generations; is intergenerational inequity a part of Social Justice, and in what makes our current societies just?

The subject of climate change and its relation to human rights fits nicely at the intersection of social justice and intergenerational inequity. Climate change mitigation and adaptation in themselves can be said to be human rights concerns. This is because the cascading effects of climate change affect every element of society and have the potential to further undermine efforts to ensure basic human rights in the present day. The temporal aspect of climate change, as a reality that will persist past the lifetime of those most responsible for its influence, means that intergenerational inequity is central to the climate change discourse. Even though intergenerational inequity may be an outlier on the topic of social justice, its relation to climate change and the future of the human rights of our youngest population earns it serious consideration.

It is from the same intersection that the term Climate Justice arises and needs to be mentioned here. The United Nations Development Program (UNDP, 2023) defines Climate Justice as: “putting equity and human rights at the core of decision-making and action on climate change” (ibid). Climate Justice, then can be seen as centring the climate change discourse around social justice or, ensuring social justice in a changing climate. There are of course then many elements to Climate justice, of which one is based around “the polluter pays principle,” however, for this paper, we will mention three elements as laid out by the UNDP (most specifically the first and third principles): “structural inequalities, socioeconomic inequalities, and intergenerational inequity” (ibid). Structural inequalities are those based on an individual’s socioeconomic position, gender, age, and race, thus, as we will discuss later with WASH, women and indigenous groups are often disproportionately affected by the effects of climate change. Socioeconomic inequalities are defined by the ability of a State, region, community or individual, to adapt to and mitigate the effects of climate change and are unequal across the globe (ibid). In terms of intergenerational inequity, the UNDP’s definition looks at how, many of the current generation, and the future generations have not contributed greatly to climate change but will bear the consequences of it (UNDP, 2023). If turned around to make social justice itself the focus of the discourse, climate justice asks us to consider the following: in our current context of a planet in flux due to climate change, any discussions on Social Justice need to take into account the cascading effects that this context creates.

To address climate change and its global impact, the Sustainable Development Goals (SDGs) of 2015-2030 were introduced. These arose after the unequal progress made around the globe on the Millennium Development Goals (MDGs). Although not explicitly human rights goals in and of themselves, the SDGs nevertheless address many of the separate, and often overlapping, human rights goals that are key to achieving Social Justice. Of the seventeen goals taking “urgent action to combat climate change and its impacts” (UNDESA), is Goal 13. But climate change adaptation in the form of calls to ensure sustainable development and management of resources is seen in many others. For example, Goal 16 is to “[p]romote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels” (ibid). Thus, we see how both the approach of Climate Justice and a climate change-aware implementation of Social Justice overlap.

WASH as Socially Just

The three elements of water, sanitation and hygiene, are key determinants of the success of a community and essentially underpin social justice. For, what sort of quality of life can be expected if either of these three elements are inadequate? Put together they are referred to as

WASH, a term used commonly to emphasize the interconnectivity of the subjects. WASH is pivotal to a just society as well as to the application of the idea of social justice. Improved water, sanitation and good hygiene (along with food), are the primary defence against disease, child mortality, and low life expectancy. Without these basic elements establishing, and protecting, almost every other human right is frustrated. As such, SDG Goal 6 explicitly states that as part of the overarching aim to create a just world, we must “[e]nsure availability and sustainable management of water and sanitation for all” (ibid). Goal 3 of the SDGs is to “[e]nsure healthy lives and promote well-being for all at all ages” (ibid). These two goals, among others, underscore the importance of the discrete elements of WASH to create a socially just future, as three of them protect three of the most basic human rights: the right to water, the right to sanitation, and the right to health. Digging further into each element of WASH and its impacts on daily life, it becomes clear how they may undermine or support many other human rights.

Water as Key to WASH and Social Justice

“Water is social justice; social justice is water” (Symmes, 2022), states the International Water Management Institute (IWMI). If social justice is ensuring the human rights of people without discrimination, then ensuring equal access to sustainable clean water for all would need to be a priority. However, water was only recognised in hard international law as a basic human right in 2014 through the coming into force of the *UN 1997 Convention on the Law of the Non-navigational Uses of International Watercourses*. However, many national laws and other key international law instruments, like the *UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes*, which came into force in 1996, laid the foundation for recognising this essential right. SDG Goal 6 also calls for safe drinking water to be secured for all.

When discussing sustainable freshwater for all, there are different dimensions to consider; these are water quality, water quantity and water availability (or access). In terms of water quality, safe or improved water sources are those that are free from contaminants and pollutants and, therefore, fit for human consumption. However, around 700 million people, or 10% of the population worldwide, drink from unimproved and/or contaminated water sources. As such, water is a key indicator of social inequity, whereas access to clean water is an indicator of equity.

It is estimated that 20L of water per capita per day is needed for survival needs, i.e., to drink and for food preparation. This is for emergencies only (refer to Figure 1). This amount is an estimate as climate and conflict situations may require much higher figures. For example, insufficient quantities of water and contamination of water sources are the earliest and main causes of illness for displaced populations after and during disasters (WHO 2013). For regular daily life, however, far more than the minimum 20L of water is required (refer to Figure 1). Water is required to meet sanitation and hygiene needs, such as clothes washing and general cleaning, as well as in the performance of cultural and religious activities.

Access to improved and reliable water is unequal across the globe and is dependent on socio-economic factors as well as geography. Less than 3% of the planet’s water is freshwater and of that, almost 70% is inaccessible (glaciers, snow etc.). The rest is mostly located underground, with less than 0.5% existing as surface water (Black, 2016). Many national and international/transboundary watercourses are not able to supply growing populations’ freshwater needs. This century water use grew “at more than twice the rate of population increase (ibid). Rising demand reduces the availability of water per area, be that for personal use, agriculture (70% of average worldwide use), or industry. Demand is also fueled by

changes in lifestyle and expectations and shifts between agricultural and industrial activities. Additionally, the ability of water sources to naturally purge themselves of impurities is overloaded by contamination in populated regions, thus reducing again the amount of clean water available. For example, in India per capita availability of water has decreased to 1,500 cubic meters from 4,000 cubic meters in fifty years (ibid). This has occurred due to a mixture of the aforementioned reasons, with the additional strain brought on by climate change to weather patterns.

Figure 1

Hierarchy of Water Requirements (after Maslow's Hierarchy of Needs) According to WHO Technical Notes on Drinking-Water, Sanitation and Hygiene in Emergencies (WHO, WEDC. (2013))



Some rural communities across the globe must rely on ‘tanked-in’ water. It is an often unreliable and expensive way of trying to secure freshwater. Additionally, for many communities, the scarcity of freshwater close to home is felt disproportionately by women and children. When the closest freshwater source is a distance away (two hours walk or more for some rural regions), it is the job of the women or children to fetch and carry the water. This comes at the cost of time at school, work, or personal development. The unavailability of sustainable water sources close to home is yet another way that the need for water, first and foremost, limits the application of other basic human rights.

Just as the WASH nexus is essential to establishing social justice, and should be applied in the context of what is socially just, the right to water is crucial to both. Access to clean and sustainable freshwater sources is necessary to address sanitation and hygiene concerns. Water underpins WASH. Improved sanitation and proper hygiene practices begin and end with water. This means that to create a decent sanitation system at the point of human contact, water is required, and to maintain a decent sanitation network is to protect that same water from contamination. With safe hygiene practices, we see the same to be true, as water is required to ensure personal hygiene, food preparation and everyday cleaning requirements. The water used for all these needs must be in a state that aids in the alleviation and prevention of illness and is not instead the carrier of it. Without access to clean and sustainable water sources, there can be no life.

Sanitation and a Just Society

According to WHO, only 25% of countries “are on track to achieve their national sanitation targets” (WHO 2022). This means that with the current trends, 67% of the population

of the world will have safe and improved sanitation systems by the goal year of 2030, “leaving 2.8 billion without” (WHO 2022). An improved sanitation facility is one that separates “human waste from human contact” (WHO, 2024). The right to such levels of sanitation is considered a human right internationally, and ensuring the establishment of this right for all is part of the SDGs. However, around 3.5 billion people worldwide lack access to “safely managed sanitation services” (WHO). Among these, women and girls are disproportionately affected. The unavailability of safe toilets poses a safety risk, as trips to relieve oneself may require entering areas that are outside of communal areas, isolated and more discreet. This is especially a problem for women and girls at night when they may become a target for sexual predators. Safely managed sanitation services are essential to control the flow of contamination to freshwater sources, and are a deterrent to open defecation. Open defecation, especially of children, is a disease risk, however, it remains the only option in communities where sanitation facilities are not readily available or secure.

According to the World Bank “in total, an estimated 500 million [women and girls] lack access to menstrual products and adequate facilities for menstrual hygiene management (MHM).” (World Bank Group, 2022)

“Gender inequality, discriminatory social norms, cultural taboos, poverty and lack of basic services like toilets and sanitary products can all cause menstrual health and hygiene needs to go unmet” (UNICEF).

Thus, ensuring MHM needs are met requires a multifaceted approach, however, access to improved sanitation facilities is a large part of the problem. Many studies reveal concerns around how menstruation affects girls and female teachers at schools, (as well as women at work in general). This is especially true in low-income countries where almost half of the schools lack proper WASH facilities. It is also the case in many developing countries that stigma, and lack of facilities, lead to low school attendance. A study of ‘adolescent girls in India found that a quarter of the girls did not attend school during menstruation because of the lack of adequate toilets’ (Van Eijk et al. 2016). In another study, it was found that 57% of adolescent girls surveyed in South Sudan stayed home during menstruation because of a lack of private places to change at school (Tamiru et al. 2015). The goal of gender equality and the right to education is foiled in these instances by inadequate WASH systems, lack of a supportive environment, and community awareness.

Currently, 90% of sewage in developing countries is dumped untreated in watercourses. This is without any of the ‘conventional’ sewage treatment processes that are standard in developed states. The treatment and management of sewage requires investment in sanitation services and education and awareness programs for communities living near affected freshwater sources. However, the lack of improved and safe sanitation services at home or within a community is often a reason for watercourse contamination, and the use of the contaminated water without proper treatment is a cause of disease and poor health.

One example of a water-borne illness that spreads due to poor sanitation, is cholera (among other diarrhoeal diseases), which is caused by the consumption of water or food containing the bacterium *Vibrio cholerae* (WHO, December 2024). The spread of cholera is associated with poor hygiene practices, limited safe water access, and the lack of good sanitation facilities (WHO, December 2024). “As of 2019 estimates, there are 9 million cases of typhoid fever annually, resulting in about 110,000 deaths per year. Typhoid risk is higher in populations that lack access to safe water and adequate sanitation, and children are at highest risk” (WHO, 2023). Many vector-borne diseases spread due to stagnant and/or unclean water

located in the proximity of human populations. This is because, a prime carrier of disease, mosquitoes, breed in such waters. The situations that lead to the spread of these diseases, in other words, to a compromised WASH system are varied, and could be due to the displacement of populations, climate-related events such as floods and drought, a lack of financial means, and geographical location of a community” (WHO, December 2024). However, investing in improved sanitation in each of these situations is the first step in protecting the health of communities.

Hygiene and a Just Society

Hygiene can be defined broadly as practices taken to keep yourself and others healthy. These practices may necessarily extend beyond the individual to their household, community and surrounding environment. The Centers for Disease Control (CDC), of the United States of America, separates hygiene into four main categories: personal hygiene, infant feeding hygiene, diaper hygiene and everyday cleaning (CDC, 2024).

In terms of basic personal hygiene, as of 2022 WHO estimates that approximately two billion “people lacked handwashing facilities with soap and water at home” (WHO, 2024). Handwashing facilities are essential in the prevention of hand-to-mouth transmitted diseases. Salmonella, meningitis, and hepatitis are but a few diseases that pass from person to person, and can be prevented from spreading with good hygiene (and systematic vaccination programs). Incorporating handwashing facilities into community freshwater upgrade projects would support the elimination of hand-to-mouth transmitted diseases and also make the cleaning of cooking implements easier. Teaching the making of soap using locally accessible ingredients can provide work and also decrease the cost of soap, therefore making it more accessible. Educating relevant communities on the harm of bathing, and the disposal of water used for ablutions, in drinking sources is another way to reduce contamination of clean water sources. By the same token, teaching that only flowing, or purified water, should be used for personal hygiene purposes prevents the contraction of disease from contaminated and/or polluted water.

Infant feeding hygiene, along with the administration of infant vaccines, is key in preventing many diseases that cause infant deaths. Careful cleaning of feeding implements and the hands of food providers decrease the chance of diarrhoea-causing pathogens reaching infants. “Diarrhoeal disease is the third leading cause of death in children 1-59 months of age” (WHO, March 2024). It is also the main cause of malnutrition in children under five years of age (ibid). Many cases can be prevented with safe drinking water and good everyday cleaning practices in the home.

Diaper hygiene has three parts to it. The first is the cleanliness of the infant, and ensuring that the child has no contact with fecal matter. The second is the care taken by the changer of diapers to wash their hands and any materials that may have come in contact with fecal matter etc. The third concerns the disposal of the diapers. As with menstrual sanitary products, diapers make up a large portion of global landfills. The use of biodegradable products, and the appropriate use and washing of re-usable diapers helps to reduce the waste load of communities. In general terms a diaper is considered a biological hazard, and much like healthcare related waste, communities need to plan their disposal. In terms of cleanliness of the infants and the carers, proper hand and cloth washing facilities are needed, as well as the availability of soap as discussed earlier.

Health and the Right to Safe and Decent Work

Although WASH does not explicitly use the word health in its acronym, it is implied (It should be noted that some of the earliest uses of the acronym WASH originally used 'Health' as the 'H,' but this was later changed to 'Hygiene.'). The World Health Organization (WHO) defines health as more than just being free from disease or infirmity, but as a "state of complete physical, mental and social well-being". This holistic, cradle-to-the-grave, approach is a foundation for the building of a just society, and only possible with a strong WASH system.

The intimate relationship between sustainable development and public health was highlighted during the Covid-19 global pandemic. The human impact of the pandemic was devastating as it brought many communities to a standstill which have yet to recover. The economic impact is also still being felt as global supply chains continue to be disrupted, and lag behind demand.

The human right to safe and decent work is the emphasis of the ILO's commitment to "Social Justice for a Fair Globalization." Part of this is the commitment to ensuring that worker health is a primary concern of employers and society in general. The relationship between health and economic growth is well-documented. Research done by the McKinsey Global Institute estimates that the global GDP reduces by 15% each year due to poor health (Remes, et al. 2020). However, the positive feedback loop of good health and economic growth is such that: a healthy workforce leads to higher productivity, greater participation in the workforce (and for longer), and fewer days lost to medical leave. Thus, the investment in worker safety and health reaps positive returns immediately. According to research, this can mean that for every \$ 1 USD invested in the health of a community, not just the workers, \$ 2.70 USD can be gained in economic benefits (MGI, 2024). Ensuring the health of workers and the surrounding community is a pragmatic and mutually beneficial goal. It contributes to a socially just society, where the individual's health is prioritized and contributes to the goal of securing safe and decent work for all.

Climate Change, Water and the WASH System

Ensuring clean water, improved sanitation and hygiene for all is an age-old challenge. Climate change driven by global warming, however, has made the situation far more complex. changes in weather patterns and extreme weather events have made rainfall less predictable. The melting of glaciers has changed the timing of annual runoff, and also reduced the natural recharge of surface waters and aquifers. The over-extraction of water from aquifers (groundwater), has also led to a permanent decrease in water availability, a concern considering that approximately a fifth of water used comes from aquifers. Although shifts in water availability and flows are changing across the globe, the severity of the change and the impact it has is geographically and climatically dependent and vary from water basin to water basin.

Flooding is a boon for many countries, a periodic, predictable increase in river swells, leading to well-irrigated fields and higher crop yields, for example, in the Nile delta. With climate change, the intensity, frequency, timing and location of flooding are worsening. Uncontrolled, unusual flooding poses a threat to lives and livelihoods. As devastating as floods can be, their first victim is often sanitation infrastructure. Sewage system overflow and other lavatory facilities being hit by the flood will spill waste into the streets and contaminate freshwater sources. This contamination leads to the direct transmission of disease and harmful substances and the increase of vector-borne illness for the time it takes for all stagnant waters to clear in the aftermath.

Along coastlines, sea-level rise is leading to inundation of saltwater (saltwater intrusion), and the destruction of farmlands and freshwater infrastructure. The salination of freshwater resources reduces the availability of water for use in agriculture and for sanitation, hygiene, and living requirements. Small Island States, many of which are on the list of the UN's Least Developed Countries (LDC), are at risk of losing their homes due to climate change. Entire communities established on atolls are slowly being submerged. Their case of being deprived of both home, livelihood, and facilities is another clear example of why social justice needs to include climate change as a concern for current and future generations and why the approach of climate justice is useful.

The more arid regions of the world accustomed to periodic droughts are seeing them occur more frequently and for longer stretches. Many LDCs exist in the driest latitudes. Ensuring improved sanitation, hygiene and health is also challenging in these communities with naturally scarce water availability. Just as with flooding, extreme storms, and sea level rise, these changes in water quality and quantity harm economic activity and livelihoods, and will affect those already living in challenging circumstances the hardest, i.e., displaced populations, the impoverished, children, aged and infirm. Escaping poverty is highly linked to having adequate water for agricultural activities and sufficient quantities close enough to home to allow for children, especially girls, to attend school.

Discussion

The United Nations World Water Development Report 2020, *Water and Climate Change*, states that the “challenges of development, poverty eradication and sustainability are intricately interwoven with those of climate change mitigation and adaptation, especially through water” (UNESCO, 2020). Thus, establishing a just society centred around human rights needs to be developed within our current climate-shifting context. Water is a common element of concern across sectors, as the key to the WASH nexus and a basic human right in and of itself.

Many practical and reasonable ways exist to address climate adaptation for WASH systems. Although specific solutions vary depending on the geographical and socioeconomic circumstances of each community, there are key common elements. The first is looking for natural or nature-based solutions to adaptation. Conservation measures that protect and repair existing wetlands are one such approach. Wetlands are natural water purification systems and serve to slow water flows. Agreements such as the *Ramsar Convention on Wetlands* and the work of organisations such as the International Union for the Conservation of Nature (IUCN) and the World Wildlife Foundation (WWF), in this area have demonstrated the value of wetlands in protecting communities from disaster-level floods, creating new livelihood sources, and treating unclean water. In general, greater biodiversity in areas around human populations leads to greater resilience in the face of floods, droughts, and disease (of crops and livestock especially). Wetlands also aid in the recharge of aquifers as they slow water run-off. Creating wetlands around urban areas has also proven beneficial for this purpose. In general, a healthy environment helps to protect the well-being of the community and individuals physically and mentally. This is also one of the reasons behind the Green Cities movement, which attempts to use nature-based solutions for urban sanitation, water, air pollution and mental health concerns. Humanity's benefits from nature, especially in its wilder forms, are broadly termed ecosystem services. The discourse around ecosystem services mixes environmental rights and human rights approaches. Placing the natural world at the base of social justice and as a source of solutions for many human rights issues.

Whether in areas with relative water abundance or scarcity, water reclamation is another method to improve access to clean water. When collected and treated properly, wastewater, aka grey water, has many uses. If reclaimed water is used to service the needs of industry and agriculture, it frees other freshwater sources for WASH needs. Singapore's stormwater collection and wastewater treatment system is an example of innovation in water reuse, serving a State with high water demands and not enough supply nationally. However, the reclamation of water need not be only on such a grand scale. Rainwater harvesting kits at the local level are another example. Investment in sanitation and water infrastructure is essential in order to apply solutions such as large water reclamation projects, creating artificial wetlands and restoring existing wetlands. Other climate change adaptive, WASH-supporting infrastructure solutions are, for example, the creation of covered reservoirs, artificial recharge of existing aquifers, community and in-home toilet systems, and water purification centres.

Education is an important tool in human rights efforts. Inversely, education, as a human right itself, is required to create a just society. As discussed, in the areas of sanitation and hygiene, at the community and individual level, information campaigns to alleviate stigma and superstition around menstrual hygiene would support school attendance amongst girls, increase opportunities for women at work, and reduce the risks around specific illnesses arising from inadequate menstrual products. Educating communities about the risks associated with open defecation, and the entry of waste into water sources have been successful, as witnessed in Nepal (Kendra et al, 2017), through the work of activists such as Shrestha (also known as 'Mr Toilet'), and UN-Habitat. A community understanding the relationship between sanitation, hygiene and the spread of disease is key.

Conclusions

"The Rockefeller Foundation-Lancet Commission on Planetary Health recognizes that human health and the health of our planet are inextricably linked[,] and that our civilization depends on human health, flourishing natural systems, and the wise stewardship of natural resources. With natural systems being degraded to an extent unprecedented in human history, both our health and that of our planet are in peril" (UNFCCC, 2023).

The concept of Planetary Health places health at the centre of the climate change discourse. It also links intergenerational equity and environmental rights. Canadian provincial healthcare organisations such as those of Ontario and British Columbia (PHC, 2024), along with Britain's National Healthcare Service (NHS), have adopted Planetary Health as a core ethos. These organisations look for ways to mitigate and adapt to climate change by reducing their emissions and waste while growing sustainably to face future challenges. Movements such as planetary health at the institutional level encapsulate the linkage between social justice, climate change and WASH. The spreading of this type of framing across national, and sub-national, healthcare bodies internationally would be a significant step in the right direction.

As stated by WHO, globally there is a need to speed-up progress in the realm of WASH. 2.8 billion people still living without improved sanitation (WHO 2022) in five years is too significant a number. The inequality of investment in this sector per/capita globally is a large part of the reason. This disparity is caused by both existing global economic inequalities and the geo-economic goals of many national development funds. However, the lack of, or inefficiency of existing sanitation infrastructure is only a part of the equation in regions of water scarcity. Thus, access to reliable and safe drinking water, and water for hygiene purposes, is a problem to be resolved in tandem. The linking of these issues through the WASH nexus approach needs to be incorporated into all development projects that touch on either element. National policy needs to incorporate this nexus approach into the development of their future

plans for development. These policies should include education programs that stress the interrelation of health, water, sanitation, hygiene and climate change impacts.

Climate risk adaptation measures, like disaster risk measures, need have WASH at the center of discussions. Visa versa, WASH as a nexus entirely needs a more prominent position in the climate debate. The stress that climate change places on national and local WASH systems is a concern for developing and developed countries alike. Sharing of research on the enhancement of WASH systems is key and self-serving. In a globalized world of cross border movement, ensuring the resilience of neighbouring and regional WASH systems aids in the prevention of, and the spread of pandemics.

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