



## Bridging the divide between health, social development and environmental interventions: an example from The Leprosy Mission

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### Abstract

There is historically a divide between health and social development practitioners versus environmentalists, with one side seen to prioritise people and the other seen to prioritize nature. However, the wellbeing of humans and that of the environment are inextricably linked. This paper will use leprosy, also known as Hansen's Disease, as an example to show how disregard for the environment through anthropogenic caused climate change may threaten human health. Additionally, it will outline, through the example of The Leprosy Mission England and Wales and its partners, how environmental concerns can be integrated into health programmes with salutary outcomes for both health and environment.

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**Key words:** Leprosy, climate change

### Introduction

Analyses of global challenges to biodiversity frequently pit other species' requirements against those of humans. Conservation prioritizations often address biodiversity targets without fully considering whether solutions leave room to meet people's needs. Conversely, analyses of economic development generally prioritize human advancement through continued economic growth while ignoring impacts on biodiversity.<sup>1</sup> Even promoting human health sometimes undermines environmental protection, with theories of health care ethics tending to be human-centred and not taking the environment into account. Theories of

environmental ethics may have little to say about human health.<sup>2</sup>

Bakken *et al* trace the origin of such dualistic views of justice and ecology to the European Enlightenment just over 200 years ago. Western thought since the philosophers Kant and Hegel has tended to set nature in opposition to history and space in opposition to time. Nature has been seen as a collection of objects governed by deterministic laws in a static or cyclic order; history is a dynamic, even progressive realm of self-conscious subjects capable of freely responding to moral laws. Such a view has contributed to an either/or mentality regarding ecology and justice, making it difficult to



see the dependence of history on nature, to situate the human self fully in its ecological context, or to apply moral concepts to human transactions with nature.<sup>3</sup> This paper argues that these kinds of dualistic trade-offs must give way to more convergent thinking.

This dichotomy saw, for example, Ernest Fritschi, the Director of the Schieffelin Research and Training Institute in Karagiri, India, being criticized by his board who said that his goal and objectives should be to treat and to rehabilitate leprosy patients. Money should not be diverted to other goals like farming and reforestation he was practising on the compound.<sup>4</sup>

However, for pragmatic reasons, there are signs of an emerging convergence. If preserving the environment benefits the welfare of communities, it is encouraged by health and social development practitioners. If improving the conditions of poor communities reduces pressure on endangered species or national parks, for example, it is promoted by conservationists. Concerns of social developers and environmentalists have been brought together in agreements, including the 1992 Earth Summit,<sup>5</sup> UNCED 2002 World Summit on Sustainable Development,<sup>6</sup> and the Millennium Development Goals in 2000.<sup>7</sup> The Sustainable Development Goals in 2015 broke further ground in that they sought to integrate environmental and human developmental concerns across all the seventeen goals.<sup>8</sup> According to the 2020 report of *The Lancet Countdown on health and climate change*, 50% of countries surveyed have now developed national health and climate change strategies or plans. However, in absolute terms, climate change continues to be framed in ways that pay little attention to its health dimensions.<sup>9</sup> This does not encourage environmentalists to consider health nor health practitioners to consider environment and climate change.

## The importance of the environment to health

Yet, environmental action to prevent degradation, pollution, and climate change is vital to safeguard and improve the health of human beings, particularly those who reside in developing contexts in the “Global South.” Dr Paul Brand is credited with having established that leprosy is not the direct cause of the damage causing impaired function to the hands and feet observed in affected people. Rather, the damage to extremities is self-inflicted, resulting from the loss of sensation and inability to feel pain.<sup>10</sup> He further pioneered leprosy reconstructive surgery; yet, after devoting his life to the treatment of leprosy, he still stated:

I would gladly give up medicine tomorrow if by so doing I could have some influence on policy with regard to mud and soil. The world will die from lack of pure water and soil long before it will die from a lack of antibiotics or surgical skill and knowledge. But what can be done if the destroyers of our earth know what they are doing and do it still? What can be done if people really believe that free enterprise has to mean absolute lack of restraint on those who have no care for the future?<sup>4</sup>

He had observed the impact of environmental degradation on the lives of those people affected by leprosy he was seeking to serve and realised their needs extended beyond the immediate cure for their disease and surgery to restore the function of their bodies.

## Direct impact of Climate Change on Leprosy

Climate change, more than any other area, has highlighted how lack of care for the environmental impacts on human health. The effects of climate change are being felt today, and future projections

represent an unacceptably high and potentially catastrophic risk to human health. The implications of climate change for a global population of 9 billion people threatens to undermine the last half century of gains in development and global health.<sup>11</sup> Changing climatic conditions are increasingly suitable for the transmission of numerous infectious diseases.<sup>12</sup>

In terms of leprosy, a study in Ethiopia found that a major factor that governs transmission of leprosy is the viability of *Mycobacterium leprae* outside the human body in the thermal-hydrologic regime of the environment.<sup>13</sup> In fact, a correlation between heat and humidity has long been suspected to be related to leprosy prevalence.<sup>14</sup> However, a study in Delhi, India found that although there were seasonal variations in exposure to leprosy from highly endemic pockets, the population was at risk of exposure to *M. leprae* irrespective of season.<sup>15</sup> Although climatic variables are related to and may influence transmission, they are not thought to be the main determinants of prevalence. Rather, close contact with an existing untreated person with high leprosy bacterial loads is the main determining factor.<sup>16</sup>

### Indirect climate impacts on Leprosy

However, even for diseases such as leprosy, where climatic factors, particularly heat and humidity, influence transmission are not the main determining factors of prevalence. The indirect effects of climate change will increase poverty, more specifically undernutrition, hygiene, and sanitation which are key determinants of leprosy prevalence due to their impact on the immune system.<sup>16</sup>

The link between leprosy incidence and socio-economic circumstances has been demonstrated because even before medical treatment became available, the disease vanished from Europe, and it began to decline in post-war Japan as poverty reduced.<sup>17</sup> An association with unfavourable socioeconomic indicators including access to treated

water, lower family income based on minimum wage, and more contact with other leprosy patients and the disease was demonstrated in Brazil.<sup>18</sup> Leprosy bacteria has been found in soil and water around areas around poor, leprosy-affected communities in Brazil and India.<sup>19</sup> Research in Ethiopia has indicated that leprosy transmission may be related to adequacy and access to water, sanitation, and hygiene as well as to schistosomiasis co-infection.<sup>20</sup> The literature strongly suggests the beneficial influence of adequate diet on the outcome of leprosy and the deleterious effect of a deficient diet.<sup>21</sup> For example, a study in India shows undernutrition to be more common in people affected by leprosy than in those without leprosy.<sup>22</sup> In another study in Northwest Bangladesh, seasonal food shortage during a “lean season” caused malnutrition, which, as an aspect of poverty, played an important role in the development of the clinical signs of leprosy.<sup>23</sup>

Therefore, although the direct impacts of climate change on the leprosy bacteria, *Mycobacterium leprae*, may not be likely to have a major or determining impact on leprosy prevalence, the indirect impact of climate change on the factors that increase susceptibility of vulnerable populations to developing clinical leprosy are likely to be significant. These factors include: greater poverty caused by increasingly frequent disasters such as drought, floods, and cyclones which destroy livelihoods and increase food insecurity; increases in mean seasonal temperatures and rainfall patterns over growing seasons which reduce harvests; as well as a higher disease burden among susceptible communities from other diseases that are increasing due to climatic factors that reduce immunity.<sup>24</sup> Climate change induced migration due to changing seasonal river flows, flooding, sea level rise, increasing salinity in coastal soils, and powerful cyclones threaten to displace millions in leprosy endemic countries like Bangladesh.<sup>25</sup> Drought related migratory movements in Brazil have already been suspected to have introduced leprosy into new

areas.<sup>26</sup> Climate related natural disasters should be expected to influence the distribution of leprosy worldwide through migration and the concentration of internally displaced people into crowded slums or camps.

### Increased vulnerability due to climate change

In addition to influencing the factors that increase leprosy prevalence, climate change will also affect people already affected by leprosy who may be plunged into further poverty. The 3-4 million people living with visible impairments due to leprosy<sup>27</sup> are the most stigmatised and faced with further barriers due to their disability. Leprosy is predominantly “a disease of poverty;” so people affected by leprosy are often already from marginalised communities, located in remote locations, of low caste, ethnicity, or religion. Even once cured, former patients may continue to face extreme stigma and marginalisation, expelled from families and communities, and pushed into less desirable locations, more prone to disaster or less fertile for cultivation. Therefore, climate impacts such as poorer agricultural yields and increasingly frequent extreme events leading to “natural” disasters will disproportionately affect them. As a marginalised group, they will be also less likely to receive adequate relief and rehabilitation after such an event.<sup>28</sup> Marginalised communities less integrated with mainstream society and with fewer financial assets are also more likely to be reliant on natural resources, such as rivers for drinking water, rain-fed agriculture, wild game or fish, firewood, and material for handicrafts. Environmental degradation and climate change that reduces or damages their resource base will, therefore, disproportionately impact those in the most marginalised and poorest communities with already reduced health outcomes including those affected by leprosy.

This is the experience of The Leprosy Mission. For example, the coastal province of Cabo Delgado

in Northern Mozambique is the poorest province and has the highest proportion of leprosy and lymphatic filariasis cases in the country. It is increasingly drought prone and was hit by Cyclone Idai in 2019. Leprosy colonies in Mumbai, India are located along storm drains that flood annually, and 4000 leprosy affected farmers in Northwest Bangladesh were impacted by unprecedented river flooding in 2017 that flooded houses, destroyed crops, and killed livestock. Insufficient rain in North-eastern Myanmar, meanwhile, led to rice harvests on farms of “leprosy villages” failing in 2020 as rainfall patterns change.

### Experience of The Leprosy Mission England and Wales

Contrary to holding a position that is either people or environment, The Leprosy Mission England and Wales recognises the impact of environmental degradation and climate change on communities affected by leprosy and the importance of assisting them in climate change adaptation and resource management. It believes that in God’s creation all things have value to God and, as a result, signed the Jamaica Declaration of the Lausanne Movement, which states:

. . . informed and inspired by our study of the Scripture—the original intent, plan, and command to care for creation, the resurrection narratives, and the profound truth that in Christ all things have been reconciled to God . . . creation care is an issue that must be included in our response to the gospel, proclaiming and acting upon the good news of what God has done and will complete for the salvation of the world. This is not only biblically justified, but an integral part of our mission and an expression of our worship to God for his wonderful plan of redemption through Jesus Christ. Therefore, our ministry of reconciliation is a matter of great joy and



hope and we would care for creation even if it were not in crisis.<sup>28</sup>

Although with a core mission to reduce leprosy transmission and to transform the lives of people affected by leprosy, it is recognised that as a Christian organisation, The Leprosy Mission England and Wales should seek to reduce its impact on the environment. Therefore, its environmental policy has recently been updated and actions to reduce impact small and large are being implemented. This includes offsetting flights (which are difficult to eliminate as our project work is all overseas). The first initiative using the offsetting funds was to equip the Leprosy Hospital in Naini, India with solar panels, which also provided a cheaper, more sustainable power source, instead of coal-based power from the grid or diesel power from the back-up generator that produce greenhouse gases. Within the UK, actions have included phasing out plastic envelopes for our newsletter mailings in favour of potato starch ones which are biodegradable and changing our electricity supplier to one obtaining electricity and gas from renewable sources.

In its interventions, outcomes that will conserve the environment as well as improve the lives of people affected by leprosy are being sought out. In Nepal, the new hospital building under construction will utilise biogas and solar panels to provide hot water for the facility. In Mozambique, an approach called “Farming God’s Way,”<sup>29</sup> using Biblical references on good stewardship and creation care to encourage communities to adopt “conservation agriculture” promoting good husbandry practises that conserve and improve the soil has been promoted. This improves the yields of local crops as well as introduces new ones and improves food security in the drought prone coastal areas of Cabo Delgado province. This has been recommended as an effective means of community-based climate change adaptation.<sup>30</sup> Another intervention has been the promotion of “System of Rice Intensification”<sup>31</sup> in Shan State, Myanmar.

This agricultural technique keeps the rice paddy moist rather than waterlogged, plants are evenly spaced, and organic inputs given. It reduces methane emissions, a powerful greenhouse gas, chemical inputs are not required, and yields are increased.<sup>32</sup> Leprosy Mission beneficiaries reported dramatically improved harvests even in the first year of using this method, with some farmers doubling production, enabling them to sell a surplus and give a tithe to the church for the first time in their lives. Increased snail pests on the crops on the drier paddies were even seen as a bonus as they were consumed as food.

Other Leprosy Mission interventions that support people affected with leprosy as well as benefit the environment include the following: promotion of organic farming methods in Sri Lanka and Myanmar, use and conservation of wild “vegetable” plants for improved nutrition in Sri Lanka, and tree planting around leprosy communities in Niger.

## Conclusion

People depend on the environment for their health and wellbeing, so it is vital that health focused personnel and organisations integrate environmental action alongside community health and development. Environmentally focused organisations that have included community health interventions within their programmes include A Rocha Uganda, promoting bio-sand water filters and fireless cookers on the edge of a biodiverse urban wetland in Kampala<sup>34</sup> and Plateau Perspectives working on environmental protection in mountainous regions in Asia, improving people’s resilience and quality of life including co-funding nine clinics and health worker training in Tibet.<sup>34</sup> With climate change acting as a risk multiplier reducing health outcomes, it is vital that there is an integration of health, development, and environmental concerns in grassroots projects. This is even more pertinent for Christian individuals and agencies as Bradshaw of World Vision explains:



Christian development cannot be complete without a concern for the environment, as in contrast to the dualistic Western worldview that separates health and development practitioners from environmentalists. All the elements of creation participate in God's redemptive work through Christ. Environmental components must be integrated into the many issues such as health that address wholistic Christian development's concern for sustaining life.<sup>35</sup>

Environmental concerns do not so obviously interlink with the goal of "defeating leprosy and transforming lives" of The Leprosy Mission, but thinking more deeply shows that they must! It is hoped that this example will encourage other health practitioners and agencies to consider the environment more carefully.

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