

Global health equity and climate stabilisation: a common agenda

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Although health has improved for many people, the extent of health inequities between and within countries is growing. Meanwhile, humankind is disrupting the global climate and other life-supporting environmental systems, thereby creating serious risks for health and wellbeing, especially in vulnerable populations but ultimately for everybody. Underlying determinants of health inequity and environmental change overlap substantially; they are signs of an economic system predicated on asymmetric growth and competition, shaped by market forces that mostly disregard health and environmental consequences rather than by values of fairness and support. A shift is needed in priorities in economic development towards healthy forms of urbanisation, more efficient and renewable energy sources, and a sustainable and fairer food system. Global interconnectedness and interdependence enable the social and environmental determinants of health to be addressed in ways that will increase health equity, reduce poverty, and build societies that live within environmental limits.

Introduction

Modern ways of living have greatly improved health and wellbeing—the global average life expectancy has increased by more than 20 years since 1950. However, differences exist in life expectancy and rates of infectious and non-communicable diseases and violence and injuries between countries and population groups. Asymmetric economic growth, unequal improvements in daily living conditions, unequal distribution of technical developments, and suppression of human rights have perpetuated and worsened health inequities, particularly over the past three decades.¹

Industrialised societies, meanwhile, have inadvertently, or with ill-judged indifference, perturbed and depleted the planet's biogeophysical systems—the Earth system that sustains life. Recent human activity has increased the atmospheric concentrations of greenhouse gases, particularly CO₂, methane, and nitrous oxide, to a near-critical state² that now threatens to cause an environmental crisis as the world warms, with some areas becoming unusually wet and subtropical regions unusually dry.² Various implications include the diverse effects of sea-level rise, disrupted agricultural productivity, displacement of people, and loss of livelihoods.³ Analysis of palaeoclimatic data points to the need to reverse build-up of greenhouse gases over coming decades and reduce the CO₂ concentration, currently 385 ppm and rising, to around 350 ppm.⁴

The environmental and health outcomes of climate change impinge unequally across regions and populations. In 2000, climate change accrued to that point caused a conservative estimate of 150 000 deaths; although the poorest 1 billion people account for around 3% of the world's total carbon footprint,⁵ the deaths were almost entirely confined to the world's poorest populations (figure 1).⁶ Without rapid progress towards the Millennium Development Goals (MDGs), thereby lessening the background rates of disease and child mortality, the multiplier effects of climate change on those health outcomes will greatly exacerbate health

inequities. Climate stabilisation, eradication of poverty, and health gains for all are thus inextricably linked.

The Commission on Social Determinants of Health was established in 2005 by WHO to identify strategies to ensure all people have the chance to lead healthy lives.¹ Pivotal to that goal is the need for a fair distribution of societal resources and a stable Earth system, both dependent on politics and policy at global, national, and local levels.

In this paper, we examine the interface between climate change, social conditions, and health inequity. We emphasise the potential associated benefits for people and planet from coherent cross-sectoral policies and programmes at local, national, and global levels. Addressing the social determinants of health will not only improve global health, but also help to reduce poverty and social inequity, such that people, communities, and nations can cope with the effects of climate change and to avert further damage to the global environment.

The characteristics of modern global society—especially economic priorities and processes, social conditions, and technological choices—both underlie the problem of climate change and exacerbate health inequities. The policies that generate and distribute political power, income, goods, and services, at all levels, also determine the tangible differences in the circumstances of peoples' lives—circumstances that contribute significantly to health inequities (figure 2).¹

The commission's work identified three overlapping policy areas as being key to both global health equity and climate change: economic development, urbanisation, and food systems.

Economic development at any cost

Global politics and economic and social policies have changed greatly in the modern era, particularly since World War 2, with far-reaching health, equity, and environmental ramifications. In 1944, the Bretton Woods Accord aimed for economic growth based on a liberal system of open markets. Institutions were created to

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Figure 1: Deaths attributable to anthropogenic climate change between 1970 and 2000, density-equalising cartogram⁶

manage the global flow of capital and set the framework for future international trade agreements through the General Agreement on Tariffs and Trade and, since 1995, the World Trade Organization.⁷ Since the 1980s, international financial institutions have embraced an economic strategy known as the Washington Consensus.⁸ This strategy extols the role of the market (entailing deregulation, privatisation of public services, correctives against inflation, stable currencies, and improved opportunities for multinational corporations) in achieving greater global economic integration.

The economic trajectory since the 1980s has increased global interconnectedness and interdependence, which has facilitated greater mobility of capital, technology, knowledge, and people; however, attendant gains in power, income, goods, and services have been uneven. Economic development has contributed to longer life expectancy in most countries. However, nearly 3 billion people, including 1.3 billion workers, still live on less than US\$2 per day.⁹ The structural adjustment policies introduced in the early 1980s by the International Monetary Fund and World Bank, to ensure debt repayment, diverted government resources away from health, education, and sustainable development.¹⁰ Modern international trade agreements have constrained government capacity to protect public health, regulate environmental conditions, and ensure affordable drugs¹¹—with serious implications for health equity between and within countries.¹

In creating a global marketplace that depends upon ever increasing volumes of production, consumption, and long-distance transport of goods,¹² the same economic trajectory has led to increasing overexploitation of finite natural resources, energy scarcity,¹³ and overloading of natural environmental systems (figure 3).¹⁴ And all of this is in the context of a growing global population (median UN prediction of 9 billion people by 2050), likely to result in greater internal and international flows of migrating

people, particularly towards urban areas, and potentially greater social disruption and conflict as land and vital resources, including food and water, become scarce.¹⁵

Urbanisation, health, and the environment

We now live in a mostly urban world.¹⁶ Declining investment in rural infrastructure and amenities, with disproportionate levels of poverty and poor living conditions, together with the perception that cities offer great opportunity, has led to migration to urban centres. This migration, combined with natural population growth in urban areas, creates enormous, often unmet, demand for housing, services, transport, and work.¹⁷

This process, closely linked with rising consumerism and intraurban economic disparity, has imposed significant costs on both population health and environment.¹⁷ Although urban living can provide many benefits,¹⁸ urbanisation has been accompanied by increases in the prevalence of diabetes, heart disease, obesity, mental-health problems, alcohol and drug misuse, and violence, which are typically most common among people of the lowest social status.¹⁷ Road-traffic injuries, vehicle-related air pollution, and traffic noise cause thousands of cases of poor health and deaths each year, with urban areas by far the most affected.¹⁹ Furthermore, poor urban living conditions, particularly for the 1 billion people worldwide living in low-income urban settlements (urban slums), remain a key breeding ground for communicable diseases.

The prevailing form of urbanisation has substantial environmental consequences. Urban air pollution from transport, industry, and household heating is a major problem, though now declining in high-income countries.¹⁷ Meanwhile, transport and buildings contribute an estimated 21% of global CO₂ emissions²⁰—mostly from cities in developed countries. However, the combination of rapid economic development and concurrent urbanisation

in poorer regions means that developing countries will be both vulnerable to health hazards from climate change and increasing contributors to that problem.²¹

Food, climate change, and health equity

Food, nutrition, and hunger link global health equity, poverty, and climate stabilisation agendas. An estimated 854 million people worldwide are food insecure,²² predominantly in the world's poorest and most vulnerable communities. Concurrently, a nutritional transition to energy-dense diets is occurring, leading to increased prevalence of obesity—particularly among the more socially disadvantaged groups in all but the poorest countries.²³ The nature of the food system, from agricultural production to retail, contributes to these diet-related health inequities. As the cost of a basket of household goods increases rapidly, relative to income, all but the very rich will feel the effects. Some will be able to purchase a healthy diet; some will only be able to purchase the cheapest sources of calories—energy-dense, highly processed products that increase the risk of obesity and diabetes, and many millions will be unable to afford even that.²⁴

The food system also contributes to and is affected by climate change.²⁵ The drought-prone and long-term drying conditions emerging in some subtropical regions around the world, higher temperatures, rising sea levels, increasing frequency of flooding, and acidification of oceans are now contributing to reduced quantity, quality, and affordability of food.^{5,22,25}

Health and climate change: a common agenda

The world's climate seems to be approaching a tipping point, likely to involve some irreversible changes. Global life expectancy is increasing, though more slowly than before—and with many left behind. Prevailing international and national policies portend various negative effects of unprecedented scale on human wellbeing and health and on the planet itself.^{1,26}

There is need and opportunity to reorient these policies with today's global knowledge about the social causes of health inequity and the causes of climate change.^{1,26} Appeals for making poverty history, for global health equity, and for climate stabilisation resonate with increasing numbers of civil-society organisations, and there is growing public awareness that major changes are needed. Bringing these voices together will help create the new model of development that is needed.

These three great contemporary human struggles—achieving global health equity, poverty eradication, and climate stabilisation—would benefit synergistically from alignment of their policy agendas.

Investment in health by reducing poverty would be enhanced by action to remedy the underlying causes of the causes—the structural drivers of social inequities and improve daily living conditions for all. Mitigation of climate change is prerequisite for avoidance of a widening of health inequities. Meanwhile, adaptive responses to

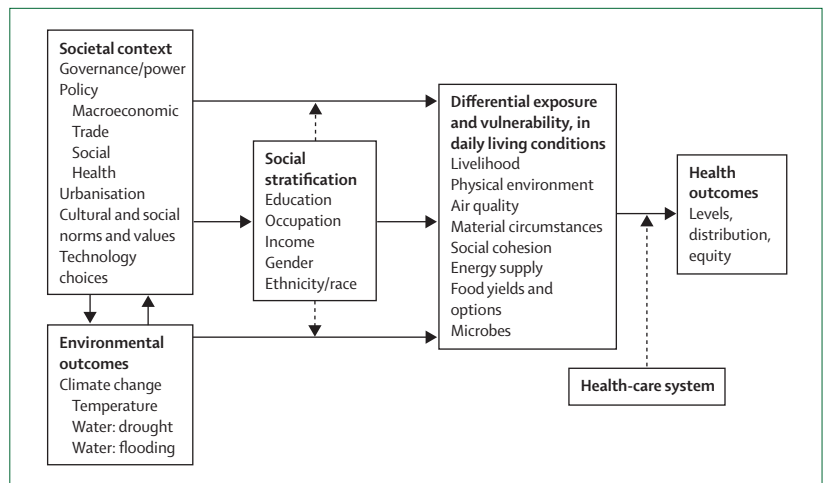


Figure 2: Relations between climate change, social determinants, and health inequity. Solid lines denote causal pathways, dotted lines indicate effect modifiers.

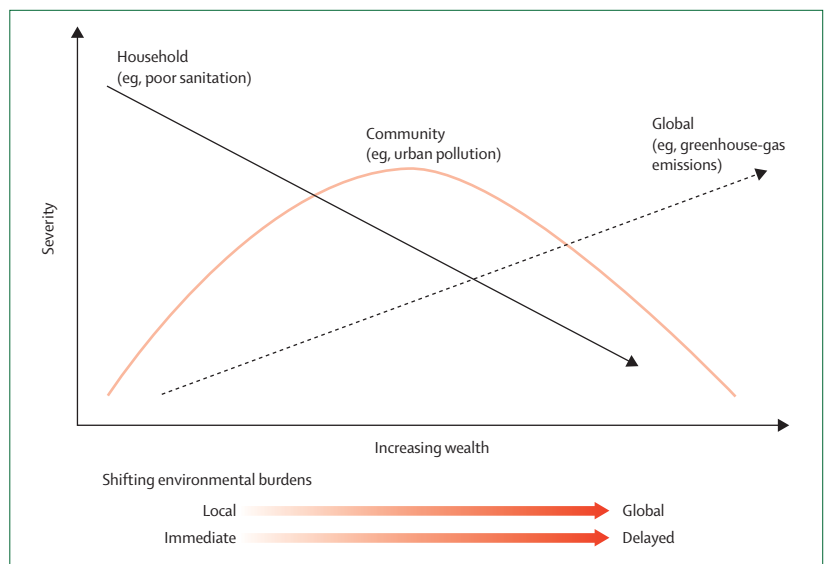


Figure 3: Environmental risk transition framework throughout the development process¹⁴

climate change, while necessary, are a less sure way to reduce health inequities, since self-interested adaptation by those populations with most resources would necessarily increase the health gap.

Within a global framework of contraction and convergence—whereby the global average level of consumption and waste generation contracts as countries converge on a more equitable shared mean level²⁶—environmental scientists and policy makers are now paying increasing attention to agriculture, transport, fuel, buildings, industry, and waste strategies relevant to the mitigation of climate change. Such a framework is central to health equity, and health and equity should be integrated into these strategies to ensure multiple gains across the different sectors. Actions taken at several levels, involving various sectors, will help facilitate sustainable and equitable development.

A Green Marshall Plan for global health equity

After World War 2, with many countries' economies overstretched and infrastructure damaged, the Marshall Plan envisaged cross-country structural support to rebuild a prosperous Europe. Given the critical state of both population and planetary health, a 21st century plan based on principles of equity and sustainability is needed, addressing both urban and rural communities in low-income and middle-income regions of the world.

The poorest segments of the world's population, including 1 billion people living in urban slums, have the right to the conditions necessary to achieve high standards of health, including water, sanitation, electricity, and schooling.²⁷ However, low-income and middle-income countries are not likely to be able to provide all the funds to create a healthy living environment, while adapting to and mitigating climate change. A sustainable Marshall plan for the 21st century is needed; this plan should focus on development that benefits the poorest countries and the poor within and be based on principles of renewable energy resources and sustainable systems of water supply and sewage treatment. Experience shows that the upgrading of slums is affordable and improves health and community development.¹⁷ Financing on a shared basis by international agencies and donors, national and local governments, and households themselves, could be designed to promote successful environmentally conscious solutions and models of new urban design and rural development.

Stern²⁸ emphasises that if substantive action is not taken soon the overall costs of climate change will equate to a slowing in rate of growth of global gross domestic product by at least 5%. By contrast, the costs of reducing greenhouse gas emissions to avoid the worst effects of climate change can be limited to around 1% of global gross domestic product each year. Cofunding from high-income countries could support the plans and programmes in less affluent countries.²⁹ The financial support required by low-income countries to achieve the MDGs and other agreed actions to reduce poverty, improve global health, and increase resilience to climate change are modest (\$US200 billion each year: a fifth of the annual increase in wealth of high-income countries)¹⁷—do we have the political commitment to provide it?

Fair and sustainable global food trade

The uneven distribution of existing food stocks through protectionist import and export tariffs, subsidies, and the growing demand for certain high-value food commodities is stressing international and domestic food stocks and raising food prices.³⁰ The production of crops for biofuel is further eroding food stocks, depleting water stores,²² and contributing to increases in food prices.³⁰

Fairness in international trade arrangements is crucial to averting reoccurring global food crises. Hence agenda setting and decision making in relation to trade

agreements must tackle the balance of geopolitical and economic power. Good global governance is crucial. Better public health and environment representation is needed in key areas of international economic policy and trade negotiations with the World Trade Organization and processes including the Codex Alimentarius Commission.^{1,31} The integration of health equity and environmental-impact assessments into all future trade agreements would reduce harmful consequences and ensure coherence across sectors.

Increasing demand for foods such as meat and dairy, particularly among urban middle classes, has serious ramifications for climate change. Livestock production (including transport of livestock and feed) accounts for nearly 80% of the agricultural sector's greenhouse gas emissions.²⁵ The short-term warming resulting from these emissions, dominated by methane (which, over 10–20 years, is two orders of magnitude more powerful in its greenhouse effect than is CO₂), is substantial. Reduced consumption of meat from ruminant animals (major sources of methane), especially in today's high-income countries, could therefore be an important first quick-gain step in mitigating climate change and would reduce the risks of some cancers and obesity.²⁵ Complex trade and national agricultural policy deliberations will be needed to achieve a convergence of red-meat consumption in high-income and low-income countries on an overall global average, shared equitably, of around 90 g per person per day, with only half of that from ruminant sources.²⁵

Sustainable urban planning and design

Environmentally sustainable development, oriented to health equity, must ensure the supply of basic amenities, including water and housing. Many countries, rich and poor, face a major challenge in providing affordable housing that is based on sustainable building standards and is close to transport, schools, and shops.^{1,17} Creating more equitable and environmentally conscious housing development requires regulation of land development for urban regeneration, through, for example, fair-share housing programmes and enforcement of housing laws. For example, the California tax-credit programme for affordable rental housing established a point system that prioritises projects meeting sustainable-development goals (such as walking distance to transport and schools) and projects in neighbourhoods where housing is an integrated part of a comprehensive revitalisation effort.³²

An estimated 1.2 billion people worldwide, mostly in low-income and middle-income countries, lack access to clean water and sanitation.¹⁷ Because water is a scarce natural resource for many poorer communities, a publicly regulated approach to management of water resources is needed, ensuring both fair access and sustainable use.

Cities that do not provide affordable and convenient public transport or do not prioritise the need for walking, cycling, and playing and that are dependent on a high-volume commercialised food system encourage the

nutrition transition and the decline in physical activity—and, thus, the obesity epidemic.²³ Such urban landscapes predispose to car use, thereby contributing air pollution, greenhouse-gas emissions, and risk of road-traffic accidents.¹⁹ An integrated approach to the reduction of transport emissions, primarily via technological advances, improved mass-transport systems, and congestion charges on private transport (panel), would bring many associated health benefits.³³

For some cities, such as New Delhi in India and Darwin, Perth, and Adelaide in Australia, the average number of days forecast to be above 35°C will become dangerously high in several decades on the basis of predictions with mid-level carbon emissions.³⁴ Poor neighbourhoods and manual workers are likely to be the people most exposed to urban heat and with least capacity to adapt. The degree to which cities both create greenhouse gases and trap heat can be changed through good city design: occurrence of shade-trees and green space, orientation of buildings relative to wind direction, extent of combustion-based transport, reflectivity of construction and natural materials, and number of local heat sources.

Urban design that ignores issues of health equity and environmental needs results in built environments with adverse effects disproportionately affecting socially disadvantaged groups. Adapting the healthy-cities model of urban governance to include principles of equity and sustainability could provide an integrated framework with which to redress this.

Rural investment

Countering the health and environmental pressures associated with urban growth requires sustained investment in rural development. Not only will this investment help reduce poverty and improve rural health; but also it will better enable rural communities to adapt to climate change. Policies aimed at health, sustainable development, and poverty reduction will require action on issues of rural land tenure and rights, and rural infrastructure including health, education, roads, and services. It will entail diversification and increase in rural employment opportunities. Government and donor support to provide working capital and marketing linkages is needed, as is sustainable and equitable agricultural development. Lessons learnt from the Green Revolution highlight the need for a multifaceted, multiagency, approach to agricultural development.³⁵

The Indian National Commission on Farmers and others have outlined a programme for the renewal of agriculture that comprises five interacting action plans: enhancement of soil health; augmentation of and demand management for the irrigation water supply; instigation of credit and insurance systems; improvement of technology; and creation of farmer-friendly markets. These actions will benefit farming families if they also support nature, poor people, women, and livelihood. An Indian Trade Organisation could oversee the renewal

Panel: Cross-sectoral response to transport emissions³³

Developers and planners

Provision of infrastructure, particularly transportation infrastructure, requires public transport and the use of all policy mechanisms to encourage its use, together with the promotion of walking or cycling, rather than private forms of transport.

Motor vehicle manufacturers and importers

Policies targeting vehicle suppliers involve either transfers and subsidies for research, development, and deployment, or the establishment of vehicle-emissions or fuel-economy standards.

Fuel refiners and importers

Measures to change fuel supply might involve subsidies and transfers for research, development, and deployment, or regulations and standards for fuel quality; such standards are most effective when they regulate performance criteria.

Fuel consumers and fuel prices

Energy tax, levies on specific fuels, fuel-specific differential taxes, or carbon taxes can change patterns of fuel use.

Motor vehicle operators, driving conditions, and traffic management

Busways, contraflow lanes, and signal priority help to ensure speed and reliability, thus helping to maintain high numbers of passengers per vehicle.

Travellers and shippers

Travel-demand management of the day-to-day travel choices of travellers, including when, where, and how they travel can involve incentives to use public transport, incentives to change patterns of journey-making (through, for example, car-pooling or different working hours), and disincentives for car use.

Vehicle purchasers

Schemes to give an incentive to purchase vehicles that are less environmentally damaging in the context of a fiscal regime, or voluntary accelerated vehicle retirement programmes, commonly known as scrappage programmes.

Targeting the general public

Public acceptance of policy making on reduction of both local pollutants and greenhouse-gas emissions requires at least a basic understanding of the issues and stakes involved.

programme, ensuring that traded commodities contribute to improved health and health equity.

Beyond the farm: food distribution systems

In middle-income and high-income societies, the type and quantity of food that reaches consumers is largely determined by supermarkets and the food services sector.³⁶ Within the sector there is a high content of energy-dense foods that are highly processed, packaged, and with long shelf-life. These same foods are produced by processes that are costly in terms of water and energy and have high environmental production costs.³⁷ As fuel and refrigeration become more expensive, there will be implications for food prices and the types of foods stocked by retailers and food vendors.²⁴

The food supply chain can increase its resilience to climatic shocks, decrease its effect on climate change, and improve health equity by diversification of supply chains, business models, and land use. Sustainable

land-use policies and tax incentives to attract local food businesses to low-income areas are needed. Urban and periurban agriculture and local distribution systems, now commonplace in many developing countries, are potentially viable alternatives to supermarkets, able to provide livelihoods and safe, nutritious, and affordable fresh foods for all.³⁶ Sustainable agricultural practices, secure land tenure, and supportive infrastructure are essential.

The importance of urban and periurban agriculture and livestock sustaining the urban poor, as well as social, economic, and recreational values, is being recognised and appreciated globally. For example, the Nairobi and Environs Food Security, Agriculture, and Livestock Forum (NEFSALF),³⁷ initiated in Kenya in January, 2004, involves partners from the community, government, and market sectors whose aim is to promote urban and periurban agriculture. The forum provides access to an elementary training course on urban agriculture and livestock keeping. Farmers are trained in farming as a business, group dynamics, basic skills in crop and animal husbandry, and environmental management.

Regulatory action

Over the past three decades the role of the public sector in achieving social objectives, including health equity, has been much diminished. Evidence indicates that more investment in advertising helps stimulate greater consumption of industrially refined and processed foods³⁸—foods that are detrimental to both population and planetary health. National advertising restrictions, particularly to children, may therefore have benefits for climate stabilisation and population health. Reduced access to energy-dense and environmentally intensive foods for children could also be achieved with planning regulations to manage the proliferation of fast-food outlets in particular areas (eg, near schools).

Much stronger regulatory mechanisms concerned with carbon emissions need to be put in place globally. Carbon market frameworks (such as carbon tax, emissions permits), or taking coal out of production entirely, will have very large consequences for many communities. Reliance on blunt economic instruments that increase energy costs to modify consumer behaviour will increase inequities. Alternative strategies are also needed to redistribute increased costs.

Equitable and sustainable social policy

Provision of a living wage and social protection that takes into account the real and current cost of sustainable living for health requires supportive economic and social policy. Those policies must be regularly updated and based on the costs of health needs, including adequate nutritious food, shelter, water, and sanitation, and social participation. Disadvantage can be countered through improved access to quality education and secure and decent employment.^{23,39}

Conclusion

Now is a historical moment. First, the global movement for health equity through action on the social determinants, championed by the Commission on Social Determinants of Health, has called for a new approach to development, an approach that puts health equity as a marker of social development. Second, the resolution from the World Health Assembly in May, 2008, placed climate change and health firmly on the agenda of the health sector, while emphasising that a cross-sector response was vital.⁴⁰ Bringing these environmental, health, and equity agendas together through coherent policy at global, national, and local levels will help mobilise the necessary political and popular support for a radical break with the complacent and compartmentalised attitude that still dominates much of the political agenda.

More importantly, this convergence is an essential, transformative, step if humankind is to survive equitably and in a healthy, secure, and peaceful manner in future generations. This moment should be seized. Otherwise we may find ourselves once again recounting the dismal historical experience captured in the words of Martin Luther King: “Over the bleached bones and jumbled residues of numerous civilisations are written the pathetic words: Too late.”⁴⁵

Conflict of interest statement

We declare that we have no conflict of interest.

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