
Health Care Cost and Climate Change: Confronting the Strategical Challenges.

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ABSTRACT:

Globally Climate change and public health protection are two challenges in their own unique ways that require suitable management approach for sustainable development. Climate change is one of the most important global environmental challenges, with implications on health care costs. It is projected that climate change will lead to an increased frequency and ruthlessness of extreme weather events. Substantially increasing the economic losses caused by calamitous events. This would lead to increase in healthcare cost. For sustainable development assessing and addressing the issue of climate change in a scientific way is the need of the hour. Climate change is more worrying for developing countries who with their limited resources for the development of health infrastructure would take more time to confront with any form of loss due to climate change. It is important that developing countries like India reduce their vulnerability to catastrophic losses due to climate change. This can be accomplished by adapting of strategies for managing climate change both at national and global level collectively, which even though might cost a country to implement but would lead to a more sustainable development.

INTRODUCTION

Healthcare is one of the fundamental factors that influence the quality of life. Human activities are altering the earth's climate and that climate change that has significant health impacts both domestically and globally. It is considered as a positive right by human right. The Government of every developing and developed nations have health care as their primary agendas. Climate change is an ecological menace operating at a global level which influences many societies and presents a unique threat of involuntary exposure. Global warming has increased health problems associated with heat. Climate change increases the ever increasing gap in health inequity and threatens to increase more. The impacts of climate change on human health are multifaceted and are inherently intricate to measure. UNDP in its 2030 Development goals has earmarked climate change and healthcare as its goals and recognizes them as a crucial constituent for sustainable development (UNDP).

REVIEW OF LITERATURE

Climate change, instigated by the emission of gases into the atmosphere due to the burning of fossil fuels, is expected to be the most significant threat to health in the 21st century

(Mackenbach; McMichael and Wilcox). It is important to understand the significance of multi-sectorial development to create sustainable development in health through “ascertaining the physical and socio-economic determinants of health, making it easier for people to make healthy choices, reaching out to empower individuals, local communities and private and voluntary organizations in different settings for health, e.g. homes, workplaces, schools and cities and encourage all sectors to identify and achieve mutual gains in terms of health and economic development”(WHO *Community Participation in Local Health and Sustainable Development: Approaches and Techniques*).

It's important to realize that larger benefit of public health that climate change threatens to cause. Countries that burn fossil fuels and thereby emit greenhouse gases must consider the negative impact of the same on countries consuming far less. In environmental legislation terms. It means “polluter pays principle” which means make the source of pollution accountable for producing pollution responsible for paying for the damage done to the natural environment. The categories of health-relevant climate exposures that are most likely to affect this region under climate change are (1) Extreme temperatures; (2) Vector-borne diseases (VBDs); (3) Floods; (4) Food-borne and water-borne infections; (5) Poor air quality; and (6) Heavily human-mediated outcomes like mental health and occupational health issues (Martinez, Williams and Yu). Climate change affects both the social and environmental determinants of health – safe drinking water, clean air, sufficient food and secure shelter which in turn directly affect the healthcare costs. Climate change impacts health through various direct and indirect paths (see Fig 2).

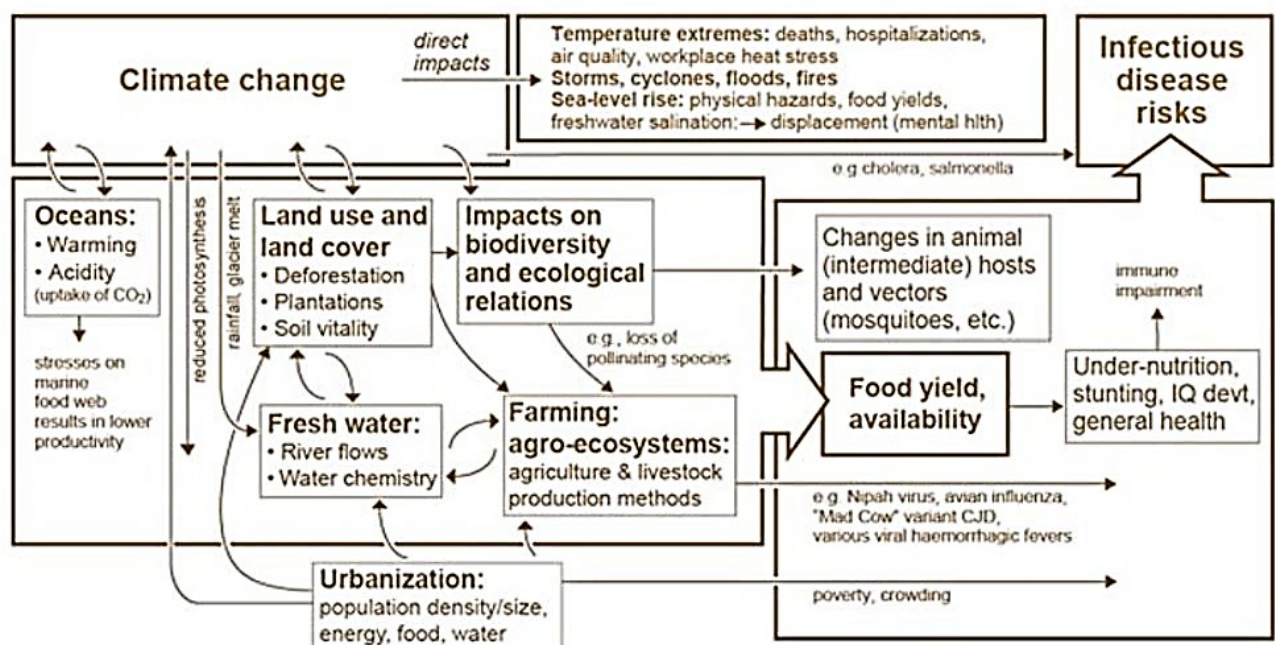


Fig 1 Illustrates some of the direct and indirect pathways by which climate change can affect human health.

Source: (McMichael and Wilcox)

To understand how climate change impacts it is essential to establish how every stakeholder in an environment is equally responsible towards mitigating the undesired impact of climate change. (McMichael) analysed the impact of climate change on human health through different pathways comprehensively. In the study rapid globalisation has increased the effect of climate change on human health in through various ways. There is a need for developing strategies to mitigate the effect of these unavoidable factors that cause these adverse effects on human health.

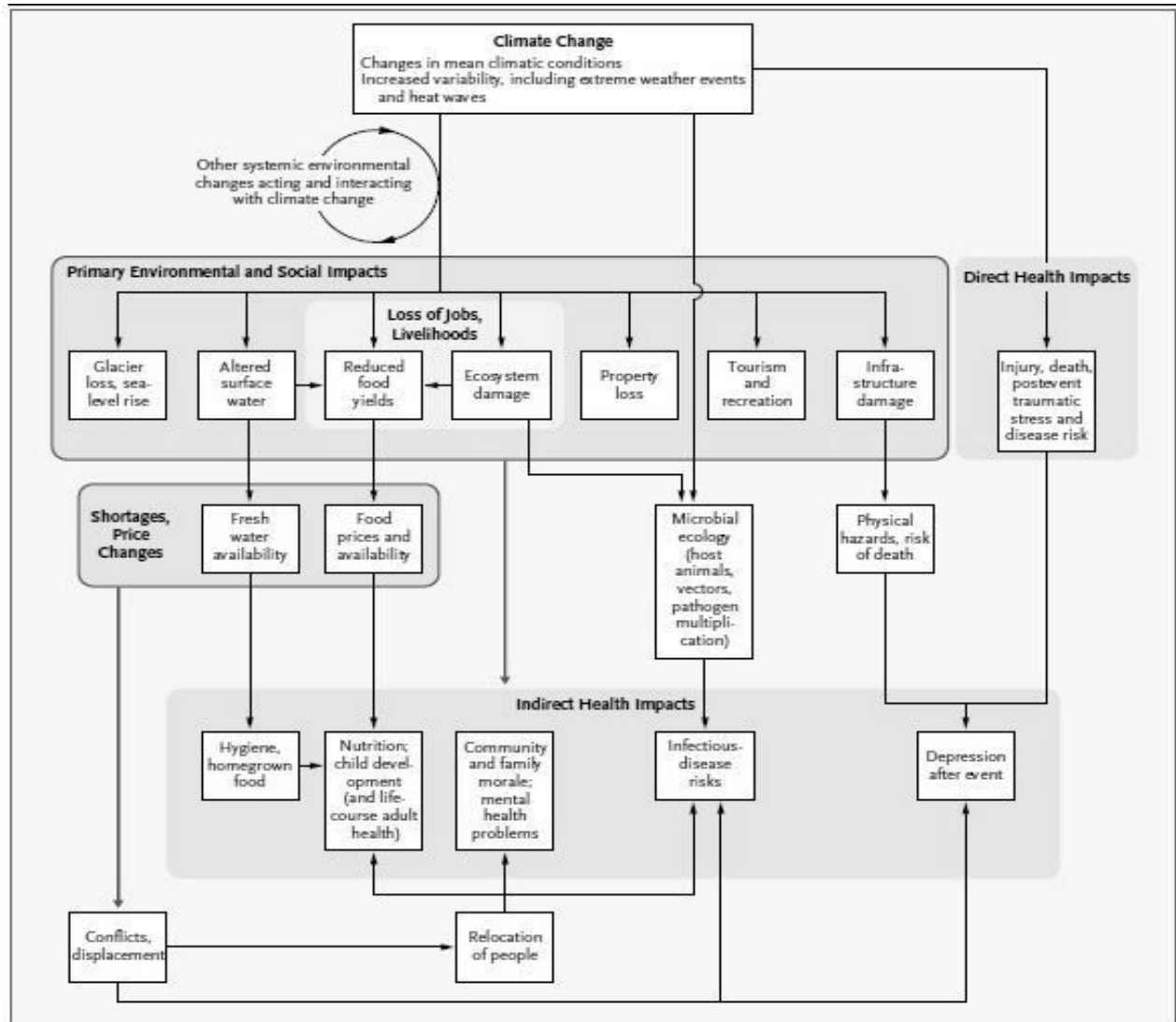


Fig 2: Processes and Pathways through which Climate Change Influences Human Health

Source : (McMichael)

In countries tropical countries like India the impact of climate change is already being experienced and there is a need to establish the operational gap in studying the impact of climate change on health (Singh and Dhiman). There is a need for sharing responsibility through collective efforts for reducing damaging effects of climate change on human health.

EQUITABLE APPROACH TO CLIMATE CHANGE

The quantum of responsibilities for ensuring preserving climate change and health lies on both developing and developed countries. Global experiences with tackling natural disasters bring forth a clear picture that healthcare costs see a dramatic increase during and after a natural calamity. Assessing the quantum of loss to life and health of people should be embodied into health policies and climate change control strategies. Areas with weak health infrastructure – mostly in developing countries – will be the least able to cope without assistance to prepare and respond.

The global economy, development, and wellbeing of people's and employment prospects are contingent on the accessibility to natural resources and healthy ecosystems. In the United States. It has been estimated that there are 38 million cases of food borne will occur each year, resulting in over 180,000 hospitalizations and 2,700 deaths (Mead et al.). In Europe extreme high air temperatures in the heat wave of 2003 contributed directly to deaths from cardiovascular and respiratory disease, particularly among elderly people which resulted in 70000 excess deaths(Robine et al.). In Bangladesh and Dhaka studies have shown that global warming has contributed to the spread of dengue which could reach to alarming proportions in near future (Banu et al.; Sirisena and Noordeen). India is more prone to economic losses due to climate change as most of the population lives in flood prone and coastal areas. Climate change will affect the health of those poor communities most who have the least access to the world's resources and their contribution to climate change causing effects is the least, there is a need for mitigation and adaptation, it will increase health inequity (Costello et al.). The indirect effect of climate change might be observed in human health through changes in food production, water resources, migration and economic development(McCarthy).

Both developed and developing countries should come together and arrive at a positive outcome to build capacity to reduce health vulnerabilities to climate change for sustainable development. While private insurance help in mitigating the health care cost increase due to climate change to some extent its needs to be complemented with certain measures that only government in a country can make possible. It's the sole prerogative and responsibility of the Government to make certain legislations that can help in preventing climate deteriorating activities and while simultaneously ensuring the enforcement of these guidelines.

Increasing migration into urban areas has led to an excess burden on the resources and land use. Rapid urban sprawl leads to unchecked build-up with no offer for sidewalks, mixed-land use, public transportation options, and connectivity which have a long-term effect on the health of the people living in these areas. Kashmir Floods of 2014 which was the most expensive disaster of 2014 and left health care services infrastructure greatly is could be attributed to the unchecked urban construction and non-follow-up of construction appropriate planning (Sajjad and Iqbal)(Meraj et al.). It's important that health professionals have an adequate representation in zoning and planning decisions for urban development schemes to benefit the public health and environment (Younger et al.).

In most developed countries for stringent development stringent legislations and regulations are present that ensure the protection of climate and thereby protection of an individual's health. There are few public health laws and regulations that have a direct bearing on the environment. But public health can be used as a resource and a guideline to provide science-based inputs for making laws and regulations that govern the environment (Frumkin et al.). In UK legislation like the Climate Change 2008 aims to bring down greenhouse gas emissions by 80% with 1990 as a baseline by the year 2050. The primary responsibility for environment protection in India currently lies with the Ministry of Environment and Forests, which has weak traction with more key sectoral ministries (Revi). It is high time that environment protecting legislations like those present in developed countries like United States Australia, UK is enacted for India.

Natural disaster put to test a countries ability to cope up with disasters especially healthcare is amongst the first in priority which needs to be restored. In the case of developing countries owing to their limited resources that are utilized towards developing health infrastructure the loss due to the natural disaster caused by climate change is more difficult to rebuild from for these countries. India has been committed to climate change.

According to projections by United nations India has a huge commitment of 1 trillion \$ for disaster management over the next five years and would benefit by 360 billion dollars in terms of cost saved if an annual investment 6 billion \$ is made in disaster management efforts (depending on the benefit-cost ratio (BCR) and discount rate applied)(UNISDR). It is vital to use the resources of disaster management to establish healthcare services that are impacted as little as possible by any natural disasters stimulated by climate change, this would ensure minimum rebuilding costs of healthcare infrastructure and also more essentially an accessibility to healthcare during a natural climatic disaster.

DISEASE SUSCEPTIBILITY AND CLIMATE CHANGE

Whenever a person falls ill he or she is losing his earning capability besides the double burden of medication and hospitalization. Climate change affects a wide variety of pathogen species which have a direct impact on public health. The cardiopulmonary system and the gastrointestinal tract are particularly vulnerable to global warming along with it also comes a higher risk of infectious and allergic diseases (Franchini and Mannucci). Air pollution is one of the main causes of death with the majority of them occurring in lower middle income countries. The 2013 International Agency for Research on Cancer (IARC) found that 3.7 million deaths each year can be attributed to outdoor air pollution, with most deaths occurring in cities which are in developing countries low middle income developing countries (WHO "Ambient (Outdoor) Air Quality and Health"). In another study it was ascertained that about 2 million premature deaths occur due indoor air pollution and these deaths were also disproportionately disturbed with the majority of them happening in lower middle-income countries (Polsky and Ly).

Vector Borne diseases like malaria, Chagas and helminth bear a major impact on human health in developing countries and there is a need for developing a comprehensive and real framework for evaluating the role of climate change in the increase of such diseases (Parham et al.). It is important to realize the impact of climate change on these vector-borne diseases as it will help in establishing comprehensive strategies for tackling the same and also provide an estimate for the resources required for combating the challenges. A recent projection done by the World Health Organization in order to evaluate the number of additional deaths foreseen in the next future provided there is no intervention on climate changes, tells a dismal tale for the year 2030: 38,000 additional deaths in the elderly due to heat exposure, 60,000 due to malaria, 48,000 in children due to diarrheal disease and 95,000 due to under-nutrition in children (WHO *Quantitative Risk Assessment of the Effects of Climate Change on Selected Causes of Death, 2030s and 2050s*). While some local short term benefits like lower number of deaths in winter due to global warming in some places but in larger context climate change through global warming causes more damage to health than benefits. It's required that development agencies recognize the potential impact of climate change on health and the need to incorporate this impact into planning for the future for a more sustainable development (Huntingford et al.). The complexity of health care cost and climate change is not easily measurable and as such requires the collaboration of climate modelling with the human health experts so that all the current imperfections in health care cost planning could be managed effectively. Developing of new effective vaccinations for allergies, vector borne diseases so as to reduce the possible impact on climate change on health could also be an alternative strategy for combating short term effects as a part of the larger framework.

ECONOMIC IMPACT OF HEALTHCARE COST AND CLIMATE CHANGE

A continuous evaluation of the impact of climate change on human health is must in terms of the effectiveness or inadvertent consequences and for damages to the health due to inaction in preventing adverse conditions due to climatic changes and also the benefit in from adapting climate change controlling strategies should be expressed in monetary terms (Martinez, Williams and Yu). Resources for sectors like health receive only residual attention in terms of the economic share in current government policy as these production sectors contribute directly to economic growth (Zahid and Khan). There is a need to change economic policy to become more accommodative and understand the implication of improvement of healthcare infrastructure has on sustainable development. According to an estimated model the direct damage costs to health (i.e. excluding costs in health-determining sectors such as agriculture and water and sanitation), is estimated to be between US\$ 2-4 billion/year by 2030 (WHO *Quantitative Risk Assessment of the Effects of Climate Change on Selected Causes of Death, 2030s and 2050s*). Climate change has increased the frequency of occurrence and the intensity of disasters especially floods in most countries. In India average economic loss due to disasters is 9.8 billion US dollars (Table 1)

Type of Disaster	Figures in million \$
Earthquakes	19
Cyclones	446
Storm Surge	727
Tsunami	1,160
Flood	7,472
Total	9,825

Table 1: India's Average Annual loss by Disaster

Source: (UNISDR)

Analyzing the problems and solutions to the intersection of climate change and human well-being through the prism of economics is necessary to evolve strategies for sustainable development. Effect of climate change on a health cost is very prominent and without developing plans and models that accommodate the climate change component into health plans one can forget about sustainable development even development would not be possible for most of the countries of the world.

There is a need for developing and evolving innovative financial mechanism in order to cope and manage the economic repercussions to healthcare due to climate change. One such innovative move is Munich Climate Insurance Initiative brings together the World Bank, insurers, nongovernmental organizations, and the scientific community to develop finance solutions for adaptation in developing countries. Catastrophic bonds could help in reducing the risk of healthcare costs that are caused due to disasters that occur post disasters that are caused by climate change.

In India the projected investment requirement for infrastructure for the 12th Five Year Plan for 9 percent real GDP growth is Re. 65 trillion(Planning Commission). This is a huge investment and requires proper taking up of integrative strategies that make infrastructure resilient to natural disasters and calamities, otherwise this could potentially jeopardous scenario wherein whole investment would go down the drain. The measure should be taken for reduction factors that instigate damage to health and thereby increase the health costs in a holistic picture. For illustration in a study, a reduction in emissions of methane and black carbon might directly prevent 2.0–2.5 million deaths per year worldwide (Anenberg et al.).If this is translated to economic benefit achieved, it would easily surpass the cost incurred on mitigation strategies adopted to reduce the emissions in the first place (Woodward et al.)

SUSTAINABLE DEVELOPMENT OF HEALTHCARE IN CHANGING CLIMATE

There is a need for an approach to healthcare and wellbeing that it should be increasingly environmentally sustainable, financially sustainable, and also make far smarter use of our virtually unlimited social and human capital. Certain core areas have been identified (see Fig.3)

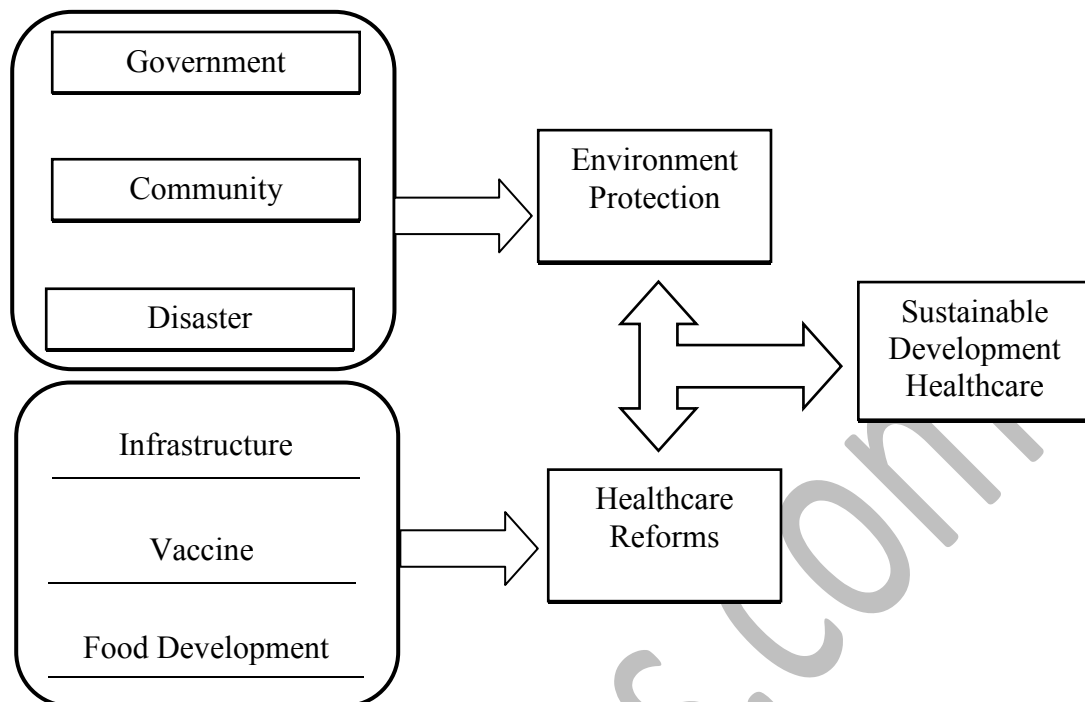


Fig 3: Strategical Framework for sustainable development in climate change and healthcare management.

Source: Author

To prevent damage to environment enacting and implementation of strong legislations are requisite for sustainable development in healthcare. Community participation in protecting the environment can go a long way in evolving an environment that is healthcare. Risks of critical infrastructure loss from flooding events are expected to rise with climate change and health care facilities will need to adapt systems accordingly. Reforms in conventional hospitals which consume more energy, waste of natural resources have difficulty in hazardous waste management are essential. While we consider the impact of climate change one also needs to consider the impact of healthcare related activities to the climate. There is a necessity for the implementation of sustainable and efficient plans and procedures, during its construction and operation of hospitals, use of renewable energy resources on the site, installation of electromechanical facilities prone to energy saving and facilities on site which recycle and reuse materials, reducing the production of polluted waste. Since climate change impacts food production and thereby has a bearing on nutrition, it would be imperative that in order to forestall long term diseases due to malnutrition which would increase the health cost. There is a need for developing alternative food that would be able to cope up the loss in food productivity due to adverse climate change.

Key challenges to embedding sustainability in the health system include reducing its huge environmental impact, while remaining within increasingly tight financial limits. For the health and care system, a large sweet spot exists where environmental and financial sustainability coincides. Studies have pointed out that poorly designed mitigation policies may lead to reduced health benefits or net harm (Mazzi and Dowlatabadi). There is a need to

develop synergies between the effort to protect health and climate and strive towards achieving better health care for all through sustainable development in health care.

CONCLUSION

There is much scope for thinking ahead about the challenges that climate change for planning ahead for sustainable development. If the current discourse is allowed to continue at its current rate, the global disaster losses will keep outpacing average economic growth (Bouwer et al.). Therefore, disaster risk reduction must be core to climate adaptation policies. Numerous mechanisms for action exist that can contribute to the aim of sustainable development.

There is a need for an extensive planning programme work to address other neglected areas in health that demand a complex interdisciplinary analysis and response. There is much to be learnt from the experiences of other countries. During the rebuilding process after a disaster there lies an appropriate opportune incentive and option for mitigation. Combating climate change is not a finite goal but a continual effort. When focusing on local health care costs and climate change response needs to be a continuous process. The important thing is to get started. There is a need for better understanding of the health effects of global environmental change through empirical studies of current health effects (Mackenbach). Analyses of future health effects need to be forecasted with reasonable accuracy by coalescing empirical data with theoretical perceptions and also incorporating expert opinions on quantitative and qualitative modelling exercises. Adjust methods of health management to cut down the impact of global climate change on health, which would mean to evolve and innovate more effective methods to control infectious diseases that are influenced by climate change through vaccination and pharmacological treatment. Assessing the environmental impact of health care (including public health) through population growth, and the potential of health development to help slow population growth along with rapid urbanization which has prompted the use of fossil fuels and thereby has impacted climate change. In order to achieve sustainable development in health care economically strong countries could intervene by introducing and using the best available strategies to nullify the effect of climate change.

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