

Climate change, public health and COP21 – a South African perspective



Climate change and health in South Africa

Observed climate trends and projections for South Africa (SA) suggest important directional changes, with annual average temperatures likely to increase by approximately 2°C more than the predicted average global increase of 2°C by 2100.^[1,2] Extreme temperature events, such as heat waves and continuous stretches of very hot days,^[3] will probably become more common. The ability to predict temperature has improved in recent years, providing sound opportunities for assessing temperature-related health impacts in SA.^[4] There is less certainty regarding future rainfall, but spatial and temporal changes are expected, with some western areas of SA having less rain and more wind, while eastern areas will have more rain. These climatic changes place SA among one of the most vulnerable countries in the world, especially given the current high incidence of several life-threatening diseases, combined with poverty and inequality of access to health.

Evidence suggests that climatic factors play an important role in the diseases common in SA. Forty percent of morbidity and mortality in children aged under 13 years in Limpopo Province was considered attributable to the combined influence of temperature and rainfall in an analysis of two decades of climate data, despite this being a relatively short period on a climate scale.^[5] Several diseases have direct associations with specific climatic factors. Diarrhoeal infections were linked in one study to anomalously dry seasons and increases in monthly average maximum temperatures in sub-Saharan Africa.^[6] Malaria in Limpopo is more significantly associated with temperature than rainfall,^[7] and models suggest a possible expansion in malaria zones in Africa, including SA in the future.^[8] Schistosoma worms, the cause of schistosomiasis (including bilharzia), may thrive in warmer water and emergent transmission in previously unaffected areas may occur.^[9,10] Dengue virus, carried by mosquitoes, may spread into SA from Mozambique and Angola.^[11]

Indirect effects of climate change on health include impacts on agriculture and food security. Water scarcity, poor water quality and unreliable access to water threaten the production of staple food crops at both subsistence and commercial levels. Changes in crop species, growing regimens and farming approaches may be necessary.^[12] For example, agro-biodiversity may be possible through promotion of neglected and under-utilised indigenous crop species that are able to adapt to water-scarce conditions.^[13] Pest risk is an additional threat to crops, especially maize in eastern Africa, and possibly in SA too. For example, predicted warming may allow *Chilo partellus*, a damaging cereal stem borer, to expand its range from warm lowlands into higher-altitude areas, highland tropics and moist transitional regions.^[14]

Climate change also threatens social structures and political factors in SA. Resource-poor communities currently face a number of stresses that curtail quality of life, livelihood options and opportunities. Climate stress and extreme events may exacerbate this problem further and possibly even undermine current strategies for development.^[15] Coping with climate stressors and finding adaptive techniques, for example for water storage or farming, will require complex and localised solutions.^[16] Food insecurity and extreme events could also lead to mass population migration impacting on disease transmission patterns, burdening healthcare systems and pressurising demand for local services.

The extent to which a changing climate is likely to create other public health pressures in SA is largely unknown, but it is considered to be a potentially substantial burden.^[17] Given the high incidence of HIV/AIDS and tuberculosis, as well as the increasing incidence of chronic illnesses, particularly cardiovascular and respiratory (asthma and bronchitis) diseases and cancers, in addition to climate-exacerbated diseases, the need for basic services such as water, sanitation and waste removal among populations with pre-existing medical conditions is paramount. Furthermore, vulnerable groups need options for reducing temperatures in warm weather, such as air conditioning and electric fans. These methods rely on electricity, which is often not available in SA. Predicted increases in temperature in the future heighten the pressing need for innovative ideas towards planning, preparedness and interventions to curtail the public health impacts of climate change in the country.

Medical emergency-type response needed

In its recent report,^[18] the Lancet Commission developed a 'Medical Emergency Model' to map climate change-health impacts and the policy responses that would be necessary to ensure the highest attainable standards of health for populations worldwide. Addressing the complex interactions of climate change and health, including the direct, indirect and social determinants of health, is essential to prevent the unravelling of the last century's gains in development and global health. In fact, responding to climate change could be the greatest global health opportunity of the 21st century.

Diverse co-benefits for climate and health relate to changes in diet, transport, insulation and fuel sources. The rapid phase-out of coal-fired power stations to protect cardiovascular and respiratory health is recommended in the report. At a time when SA is facing an energy crisis, and given its reliance on coal for electricity production, perhaps an opportunity is being missed to kill 'two birds with one stone'. Clean, renewable energy options should be seriously considered. Cities need to provide communities with environments for healthy lifestyles, such as by creating suitable infrastructures for walking and cycling. This is a unique opportunity for a developing country such as SA to find 'green', sustainable solutions when implementing basic services. For solutions to succeed, technology is not the stumbling block, neither is finance; the barrier is the will to connect the finance to the policy and politics for a rapid transition to low-carbon economies.^[18]

The way forward

In December 2015, France will host the 21st Session of the Conference of the Parties to the United Nations Framework Convention on Climate Change (COP21/CMP11). The main goal is to reach a new international agreement on climate to limit global warming to less than 2°C. Climate projections indicate that SA is likely to exceed this global average increase, with warming up to 4°C.^[2] SA may therefore be considered to be one of the countries facing the greatest challenge regarding climate change-related impacts on human health – this in addition to the present quadruple burden of infectious and chronic diseases, interpersonal violence and injuries, and ill-health associated with poverty.^[19]

The SA public health community has an important role to play in accelerating progress to tackle the adverse impacts of climate change on health. This entails effectively communicating health and climate risks, ensuring that climate change mitigation strengthens public health, adapting to new and emerging health risks, and reducing direct air pollution emissions. Planning and preparedness remain key effective measures for adapting to climate change in the public health sector. All population groups require, and deserve, basic public health systems and services including clean water, sanitation and (access to) essential primary healthcare.

Furthermore, data and research are needed to build the knowledge base for climate-health decisions, policy-making and planning. Local behaviour and beliefs require consideration, as health-seeking attitudes differ between communities and traditional healers may be consulted in lieu of formal healthcare. The National Department of Health Climate Change and Health Adaptation Plan provides the framework to implement policy, programmes and research to understand and manage the possible impacts of climate change on public health in SA. A significant effort by all relevant government departments at all levels, together with civil society, industry and other key sectors, is needed to realise the goals of the Plan and to ensure the best possible protection of the health of South Africans.

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Further reading

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