

Policy brief for Brazil

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Medicina
de Família e
Comunidade



FIOCRUZ

Introduction

This policy brief presents key findings and recommendations for the Brazilian context, based on the 2019 global Lancet Countdown report, and highlights required policy interventions relating to mosquito-borne diseases, coal phase-out, air pollution and healthcare sector emissions in order to minimise the health impacts of climate change.

In each of these areas, policies should be implemented at all levels of government to protect and improve public health. In addition to the recommendations contained within this policy brief, there remains a need to act on the recommendations outlined in the 2018 Lancet Countdown Briefing for Brazilian Policymakers.¹

Brazilian national data indicates that extreme climate-related events contribute to a significant disease burden among Brazilians, with children and the elderly most affected, exerting a high burden on health systems.^{2,3} Trends in climate change indicate extreme climate-related events are getting worse. Greenhouse gas (GHG) emissions thus present a barrier to achieving the Sustainable Development

Goals (SDGs)⁴ especially SDG 3 on health and SDG 13 on climate.

As the seventh greatest GHG emitter globally, Brazil also has an important role in climate change mitigation.⁵ Since December 2008, Brazil has developed and improved the National Climate Change Plan,⁶ which includes interventions for mitigation, as well as legal instruments. The principal goal of Brazil's Nationally Determined Contribution (NDC – i.e. its contribution to the commitment of the Paris Agreement to limit global temperature increases to well below 2°C) is a 37% reduction in emissions by 2025 and by 43% by 2030,⁶ relative to 2005 levels. While such reductions are wholly necessary, it should be noted that this is one of the most ambitious commitments among developing nations, and Brazil was the first major emitting developing country to peak and subsequently begin a decline in GHG emissions, due to its efforts to reduce deforestation in the Amazon.⁷ This decline has not continued, however, in part due to deforestation and anthropogenic fires that have increased considerably in recent months.^{7,8,9}

Key messages and recommendations

1

Improve surveillance and treatment of dengue fever and other mosquito-borne diseases by strengthening the Brazilian Primary Health Care (Atenção Primária à Saúde e Estratégia de Saúde da Família) and the SUS by reinforcing the work of Community Health Workers (Agentes Comunitários de Saúde) and Community Agents of Endemic Diseases (Agente de combate as endemias). Provide universal access to basic sanitation, clean water, waste management, and education to control the vector transmission. Increase investment in research into dengue, chikungunya and Zika vaccines.

2

Rapidly phase out coal-fired power generation, transitioning to a low carbon and climate-resilient national energy system with a carbon pricing mechanism.

3

Reiterate the national commitment to zero illegal deforestation by 2030 and along with forest landscape restoration and substantial reduction of biomass burning.

4

Develop a Brazilian version of the Air Quality Index, together with accessible online health messages both for those at increased risk and the general population. Reinforce Brazilian Environmental Laws with a view to reducing the disease burden due to air pollution, especially among the most vulnerable populations.

5

Establish a sustainable development unit for the Brazilian Public Health System (Sistema Único de Saúde, SUS) SUS and the private health sector and align with implement the WHO principles for green procurement's green procurement policy to reduce health care sector pollution and reduce associated costs. Aligned with this, the theme of sustainable, low-emission healthcare delivery should be integrated into the curriculum of health professionals in training and continued education.

6

With updated Nationally Determined Contributions under the UNFCCC due to be submitted by 2020, health considerations should be integrated throughout proposed interventions, with particular consideration with regard to coal and energy policy, air pollution, and reduction of health sector emissions. As well as accelerating progress towards the goals set out in the Paris Agreement, this will yield gains across SDG3 on health and SDG13 on climate.

Vulnerability to mosquito-borne diseases

The distribution of dengue is strongly influenced by rainfall, temperature and the degree of urbanization.¹⁰ The main vectors of dengue are the mosquito species *Aedes aegypti* and *Aedes albopictus* which can transmit viruses including Yellow Fever, dengue, and chikungunya. *Aedes aegypti* is also the primary vector of the Zika virus.¹¹ The 2019 global Lancet Countdown report tracks vectorial capacity (VC) of these mosquitoes to transmit dengue.¹¹ In Brazil, VC to transmit dengue has increased from the 1950s by 5.4% and 11.2% for *Aedes aegypti* and *Aedes albopictus* respectively (Figure 1).¹¹

In 2016 the region of Americas reported 2.38 million dengue cases, of which 1.5 million were in Brazil – three times higher than the incidence in 2014.¹² From 2012 to 2013, the cost of dengue to the Brazilian Public Health System (Sistema Único de Saúde, SUS) was estimated at US\$164 million and the societal economic burden was estimated to be US\$468 million.¹³

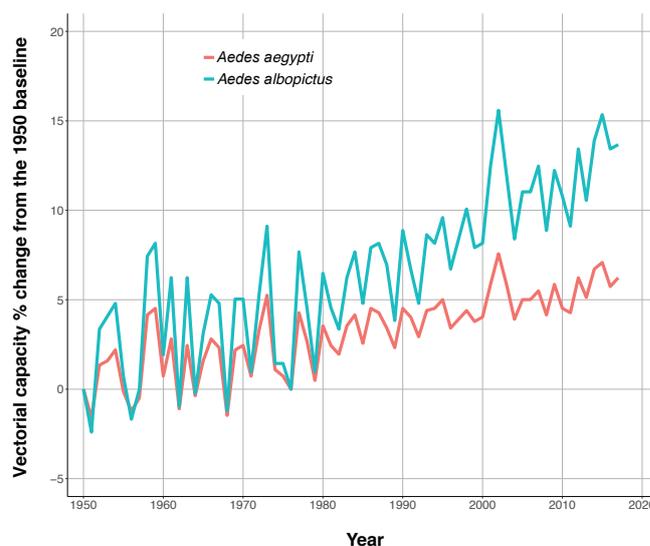


Figure 1. Change in vectorial capacity for the dengue virus vectors *Aedes aegypti* and *Aedes albopictus* in Brazil 1950-2017 (Data from 2019 global Lancet Countdown report)

Coal use

Brazil already relies on renewable energy sources for a significant proportion of electricity production.^{14,15} Despite this, recent increases in extractive coal efforts are inconsistent with Brazil's climate change targets.¹⁵ Coal phase-out is an essential component of climate change mitigation, and also for reducing premature deaths due to PM_{2.5} air pollution. The 2019 global Lancet Countdown report estimates that the combustion of coal was responsible for over 440,000 premature deaths globally in 2016.¹¹ In 2017 total primary energy supply from coal in Brazil reached 668,000 petajoules (PJ, 10¹⁵ joules) (Figure 2), tripling over the last 40 years, although the proportion of coal used to generate Brazil's electricity remains relatively low compared to other countries.¹¹

Reflecting its commitment to achieve 45% of renewables in the energy mix by 2030, Brazil should rapidly phase out coal in the coming years.^{6,16} Aligned with such objectives, the recent announcement of the Brazilian Development Bank (Banco Nacional de Desenvolvimento Econômico e Social, BNDES) that it will no longer support coal plants is commendable.¹⁷ However, the opening of new coal mines will compromise the progress already made towards coal phase-out.

Renewable energy is a crucial field for research investment in order to phase out coal fired power. It is therefore concerning that Brazil's investments in renewable energy decreased in 2018.¹⁵

The Brazilian Government has considered how carbon pricing could be used to achieve its mitigation targets, and leading companies in Brazil are already participating in a voluntary Emissions Trading Scheme.¹⁸ Implementing such policies to achieve decarbonisation would provide net economic gains and promote health co-benefits.^{17,19}

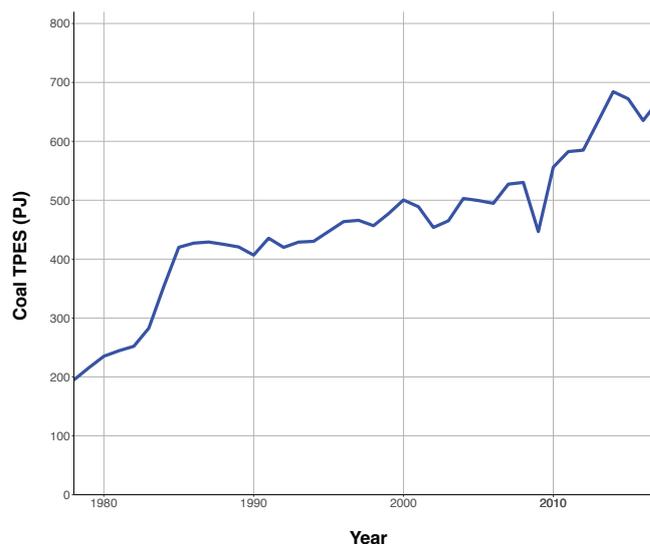


Figure 2. Brazilian Coal production in Total Primary Energy Supply (TPES) in petajoules (PJ) 1978-2017 (Data from 2019 global Lancet Countdown report)

Air pollution

Air pollution is a major cause of premature mortality in Brazil, with the 2019 global Lancet Countdown report indicating that ambient air pollution (PM_{2.5}) from human activities resulted in almost 24,000 premature deaths in Brazil in 2016.¹¹ A leading cause of these premature deaths are due to ambient PM_{2.5} emissions from households, followed by industry and agriculture (Figure 3).

For several days in August 2019, dark clouds were seen in the skies of São Paulo.²⁰ This resulted from the collision of smoke particles from intentional vegetation fires (queimadas, a common practice in farming) in the west with cold air coming from the ocean over Sao Paulo. This brought international attention to the issue of air pollution and vegetation fires in Brazil. Vegetation fires and the presence of PM_{2.5} were associated with an increase in occurrence of low birth weight,²¹ reduced respiratory function in children,²² and higher rates of hospital admissions for respiratory diseases²³ in communities of the Brazilian Amazon. One study has estimated a small but significant increase in mortality throughout Brazil due to spread of air pollution from queimadas.²⁴

The interconnections between deforestation, climate change, and anthropogenic fires have had devastating effects on the Amazon system, which is now approaching a potential tipping point (estimated at 20-25% deforestation) past which it will transition to non-forest ecosystems in eastern, southern and central Amazonia.²⁵ The queimadas are a major cause of air pollution and the increases in deforestation were recorded by the National Institute for Space Research (Instituto Nacional de Pesquisas Espaciais, INPE). From August 2018 to August 2019 INPE reported 17,050 km² of Amazon deforestation- an area similar to the Fiji Islands- and emitted 41,967 tonnes of Amazon degradation.^{8,9} 5356.46 km² of deforestation were due to queimadas.

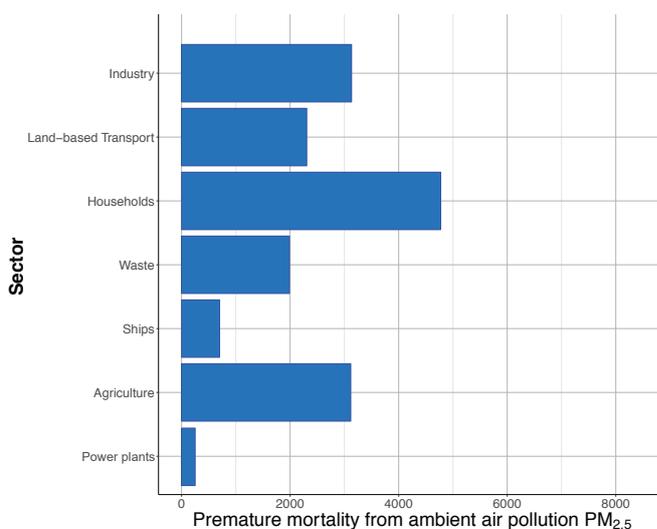


Figure 3. Premature mortality from ambient PM_{2.5} air pollution from leading contributing sectors in Brazil in 2016 (Data from 2019 global Lancet Countdown report)*

An Air Quality Index (AQI) is a valuable communication tool which indicates the level of health risk caused by air pollution based on air pollution monitoring and modelling and is used by countries including Canada, the UK, and the USA. This offers a useful resource for health professionals to advise high-risk patients (such as those with asthma, chronic obstructive pulmonary disease, or heart failure) to reduce exposure to outdoor air pollution, as well as being a means to raise awareness.²⁶

* In addition to the sectors shown here, other sources of ambient air pollution include soil and desert dust, barbecue smoke, fireworks, cremation, and cigarette smoking.

Healthcare sector emissions

There is a clear need to strengthen the capacity of the healthcare sector in order to treat and prevent conditions related to climate change. At the same time, the healthcare sector is a significant contributor to GHG emissions, with an estimated share of 4.6% of total global GHG emissions.¹⁷ The 2019 global Lancet Countdown report estimates that in 2016, the Brazilian Healthcare Sector produced approximately 46 million tons of CO₂, almost double the 25 million tons produced in 2007 (Figure 4).¹¹ Since 2012, Brazilians have produced more than 200 kg CO₂ of healthcare-related emissions per capita each year.¹¹

Sustainable procurement of healthcare commodities, as described by WHO,²⁷ is essential to reduce the carbon footprint of the healthcare system, as the pharmaceutical and chemical procurement is a significant source of carbon emissions and waste.²⁷ In England, the National Health Service (NHS) could save £414 million and avoid one million tons of carbon emissions per year by 2020, according to a 2016 report.²⁸ This model is potentially reproducible in Brazil and could already be integrated with the Brazilian National Surveillance System Sistema Nacional de Vigilância Epidemiológica, SINAVE).²⁹ There are already examples of leadership within Brazilian healthcare, with 52 health institutions in Brazil agreeing to reduce their GHG emissions by 2020.³⁰ A healthcare workforce which is well educated on the subject of healthcare sector emissions can support these efforts.³¹

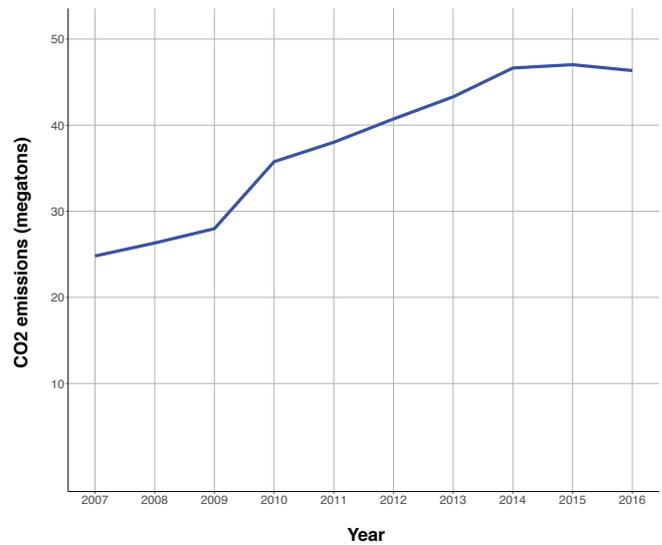


Figure 4. Absolute CO₂ emissions from the Brazilian Healthcare Sector 2007-2016. (Data from 2019 global Lancet Countdown report)

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THE LANCET COUNTDOWN

The Lancet Countdown: Tracking Progress on Health and Climate Change is an international, multi-disciplinary collaboration that exists to monitor the links between public health and climate change. It brings together 35 academic institutions and UN agencies from every continent, drawing on the expertise of climate scientists, engineers, economists, political scientists, public health professionals, and doctors. Each year, the Lancet Countdown publishes an annual assessment of the state of climate change and human health, seeking to provide decision-makers with access to high-quality evidence-based policy guidance. For the full 2019 assessment, visit www.lancetcountdown.org/2019-report/.

THE BRAZILIAN SOCIETY OF FAMILY AND COMMUNITY MEDICINE

The membership of the Brazilian Society of Family and Community Medicine (SBMFC) includes family physicians working in the public health system (Sistema Único de Saúde) who are responsible for the delivery of the Family Health Strategy (Estratégia Saúde da Família), and primary and general medical care services.

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