

The Lancet Countdown on Health and Climate Change

Policy brief for Chile

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Centro UC
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Introduction

Climate change is the biggest global health challenge of this century.¹ A balance of short- and long-term mitigation and adaptation interventions to curb emissions and reduce the impacts of climate change should be taken to protect population health.

Different ecological damages have occurred in Chile over the last 30 years, including those driven by climate change. Resulting floods, desertification, droughts, air pollution, heatwaves, and wildfires have affected millions of inhabitants and resulted in significant economic losses. Chile, as a member of the United Nations Framework Convention on Climate Change (UNFCCC), has ratified the Kyoto Protocol and the Paris Agreement, demonstrating its commitment internationally. A national Climate Change Framework Law is being discussed to institutionalise mitigation and adaptation policies,² as well as plans to phase-out coal by 2040 and achieve carbon-neutrality by 2050.^{3,4}

National data on heatwaves, wildfires, and air pollution reveals the links between public health and climate change and provides a robust evidence base demonstrating the need for policy implementation at all levels of governance. It would also be beneficial for future iterations of the National Adaptation Plan⁵ and the Nationally Determined Contribution,⁶ to include a greater focus on population health, establishing clear and binding commitments across all sectors.

This briefing, launched in parallel with the 2019 global Lancet Countdown report and building on the data contained within it, focuses on the links between health and climate change as seen in Chile. It summarises the relevant implications for government policymaking together with the necessary responses across the public and private sector, academia, and citizens. Key findings and recommendations are presented to support the decision-making processes.

Key messages and recommendations

1

Heatwaves: Implement measures to minimise the public health impacts of heatwaves, including the provision of cooling centres, early warning systems, heat-related surveillance, and effective communication between the meteorological office (Dirección Meteorológica de Chile) and the health-care sector.

2

Wildfires: Promote healthy forests through enhanced land management plans, invest in community-based prevention programmes, early detection systems, and effective public health interventions.

3

Air pollution: Increase investment in a universal low-carbon public transport system, and safe walking and cycling networks that promote active transport. Work to reduce household wood burning by providing incentives for switching to low pollution fuels.

4

Include short-lived climate pollutants, especially black carbon, and specific public health interventions in the revised 2020 Chile's Nationally Determined Contribution under the UN Framework Convention on Climate Change (UNFCCC).

Health and Heat

Extreme heat and heatwaves negatively affect the most vulnerable people around the world. Children, older people, pregnant women, outdoor workers, people with pre-existing diseases, homeless people, and individuals exposed to urban heat islands are more susceptible to suffer health impacts of heat, including stroke, heart failure, respiratory diseases, and acute kidney injury.⁷⁻⁹

Temperature rise is occurring more rapidly in areas inhabited by people. The 2019 global Lancet Countdown report finds that the global temperature increase matched with population data from the 2000s to 2018 was four times that of the simple global average temperature rise (0.8°C compared with 0.2°C). At the same time, vulnerability to extremes of heat continues to rise among older people in every region of the world.¹⁰ Older populations are also experiencing more heatwaves, with 220 additional million heatwave exposures in 2018 compared 1986-

2005 averages (with one exposure being one heatwave experienced by one person).¹⁰

In Chile, heat exposure and heatwaves have become more frequent since 1961-1990.¹¹ The average temperature experienced by the Chilean population during summer months has increased 0.46°C in the last 5 years (2014-2018).¹⁰ Vulnerability to heat exposure has increased by 7.7% since 1990 and has remained consistently higher than the rest of the Region of the Americas (figure 1).¹⁰ Furthermore, the number of heatwave exposures has also increased. From 2014 to 2018 an average of 537,500 exposure events occurred each year.¹⁰ Notably, 1.5 million and 2.6 million more exposure events occurred during 2013 and 2017 heatwaves alone, in comparison to baseline averages (1986-2005 averages).¹⁰

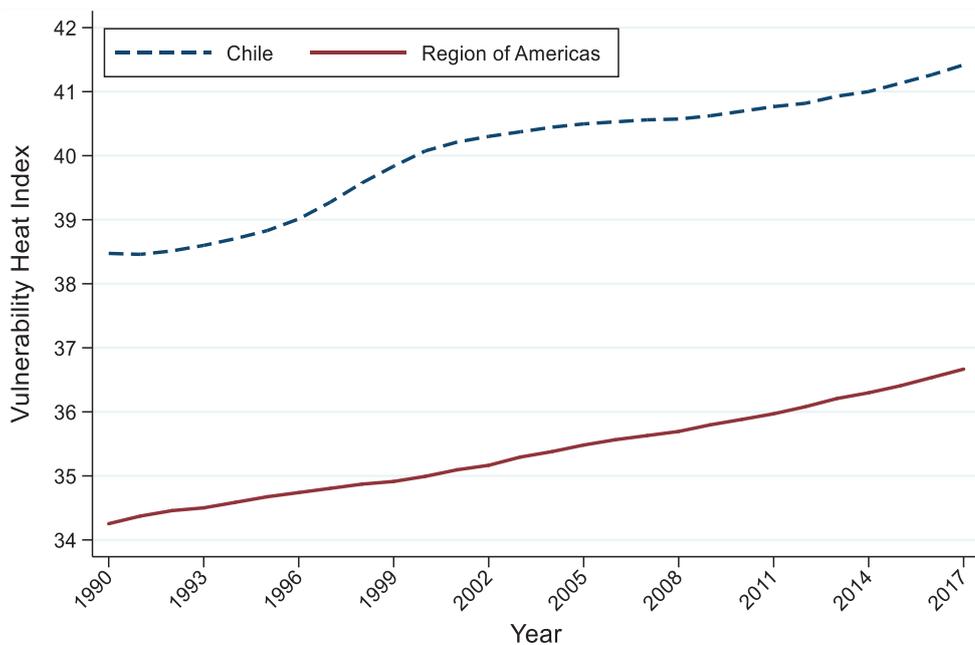


Figure 1. Vulnerability Heat Index for Chile and the Region of the Americas between 1990 and 2017.
(Data courtesy of the Lancet Countdown)

Based on this information, short and long-term strategies should be considered to reduce the impact of heat on the population. These include a pro-active public health response that includes active surveillance of heat-related health outcomes, complemented by effective communication between the meteorological office (Dirección Meteorológica de Chile), health-care institutions, and

the general population; additionally, special support should be offered to vulnerable people to cope with heat and heatwaves, including efforts to increase access to water and cooling centres. Green areas in urban settings will also work to minimise the urban heat island effect.

Health and extreme weather events: Wildfires

Wildfires lead to adverse health impacts through direct and indirect pathways. As well as direct thermal injuries, wildfires cause stress and psychological trauma.^{12,13} The smoke from wildfires¹⁴ can also exacerbate asthma, chronic obstructive pulmonary disease, and cardiovascular diseases, and lead to increased hospitalisations and emergency department visits.^{15,16} Overall, the health impacts of wildfires and losses of livelihood exert a significant economic burden.¹⁷

Data in the 2019 global Lancet Countdown report suggests that 152 out of 196 countries saw an increase in daily population exposure to

wildfires in 2015-2018 compared to 2001-2004.¹⁰ In Chile, the number of wildfires has steadily increased with the most devastating event occurring in 2017, when more than 5,000 km² of land was burnt,¹⁸ including the entire town of Santa Olga in Talca, and hundreds of people were displaced from their homes (figure 2). Lancet Countdown data indicates that an annual mean of over 164,000 daily population exposures to wildfires occurred in Chile during 2001-2004. This average more than doubled in under two decades, to above 431,000 in 2015-2018,¹⁰ increasing the risk of negative health outcomes.¹⁹

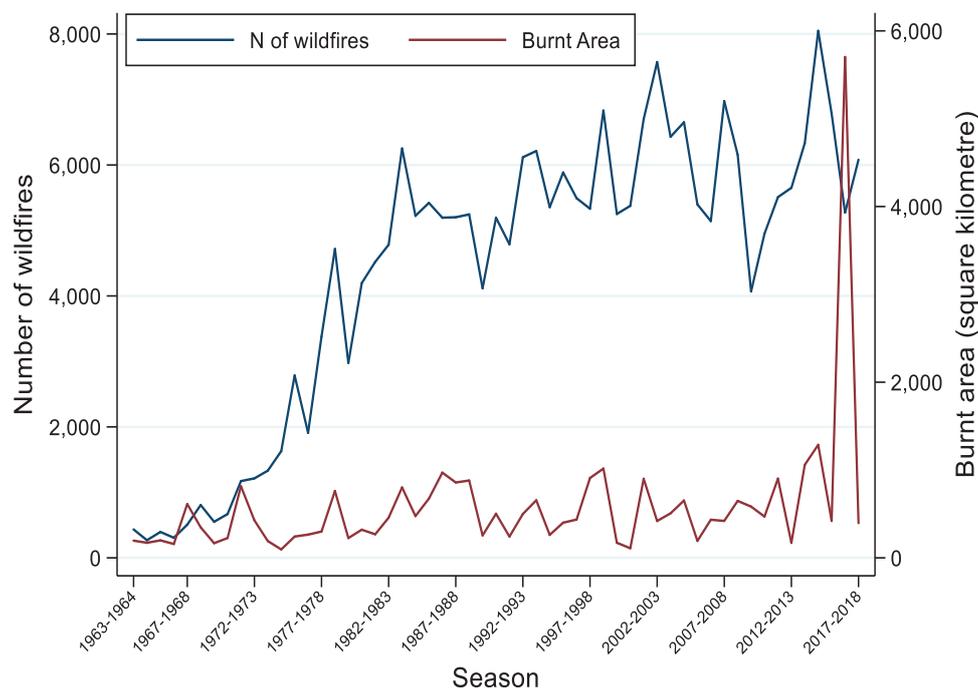


Figure 2. Number of wildfires and burnt area in square kilometres from 1963 to 2018. (Data from CONAF)

A systemic response is required to reduce population exposure to wildfires. This should include enhanced land and forest management plans that promote healthy forests and effective planning at local, regional, and national levels to reduce the impacts of wildfires, including active surveillance during wildfire seasons and

the use of early detection systems. These components should be reinforced by a public health response which supports people with existing chronic diseases, provides medical attention where necessary, and promotes preventive measures within communities; and be underpinned by principles of community empowerment.

Air Pollution

Air pollution, mainly driven by fossil fuel use and exacerbated by climate change, causes heart disease, stroke, asthma, chronic obstructive pulmonary disease, lung cancer, and acute respiratory infections. In 2016, 2.9 million deaths globally were attributable to ambient PM_{2.5}^{10,20} and total global air pollution deaths reached 7 million.²⁰ Underpinning this burden, more than 83% of cities represented in Lancet Countdown data exceeded the WHO's recommended safe level of ambient PM_{2.5} (10 µg/m³). Residential fuel combustion of solid fuels for cooking and heating were the dominant source of PM_{2.5}, followed by industry and agriculture.¹⁰

People in Chile are exposed to air pollution levels in breach of WHO guidelines. In 2018, the level of PM_{2.5} reached 24.9 µg/m³ across the country with even higher levels in certain cities; for example, Padre las Casas (43.3 µg/m³), Osorno (38.2 µg/m³), Coyhaique (34.2 µg/m³), Valdivia (33.3 µg/m³), and Temuco (30.4 µg/m³) are among the most polluted cities in South America.^{21,*}

According to Lancet Countdown data, exposure to PM_{2.5} air pollution resulted in an estimated 4,940 premature deaths in Chile in 2016. Around 2,830 of these premature deaths were due to residential fuel combustion, 620 were due to land-based transport, and 500 due to air pollution from industrial processes. In particular, 80 premature deaths were attributable to coal use in power plants and industry.¹⁰

Chile has the opportunity to take advantage of its solar potential and be a pioneer to transform energy generation in South America. Such a transition would reduce air pollutants and greenhouse gas emissions, providing significant co-benefits to population health. Despite the announcement of the government to phase-out coal plants by 2040 and achieve carbon neutrality by 2050, greater ambition is necessary. Provision of universal access to energy-efficient and low-carbon public transport based on renewable energy should be a key objective, as well as promoting safe walking and cycling networks that stimulate active transport. In addition, it is vital the reduction of wood burning by providing incentives, such as energy subsidies, for switching to low pollution fuels.

* These estimations are based on the 2018 World Air Quality Report; however, according to national information provided by Sistema de Información Nacional de Calidad del Aire (SINCA), annual PM_{2.5} could be even higher in these cities: Padre las Casas (50.2 µg/m³), Osorno (44.2 µg/m³), Coyhaique (50.5 µg/m³), Valdivia (37.7 µg/m³), and Temuco (34.1 µg/m³).

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Organisations and acknowledgements

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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/.

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