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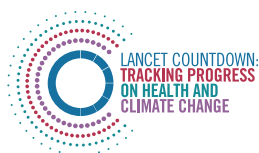


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The Lancet Countdown on Health and Climate Change

Policy brief for Costa Rica

2021



Introduction

Since the 1980s Costa Rica has seen a continuous increase in surface temperatures while precipitation has not registered a consistent signal.^{1,2} There has not been an increase in water supply, but the rise in temperatures has led to aridity, also increasing potential evaporation in areas such as the northwest of Guanacaste, which has the country's driest climate. This has led to drier soils, and an increase in the number of forest fires and their health effects, affecting those who work outdoors and are exposed to extreme conditions during the dry season.

Heat stress, the working conditions in which heat puts health and safety at risk, causes a direct increase in conditions such as fatigue, heat stroke, and exacerbation of chronic diseases³ during work periods longer than 6 hours.⁴ Heat stress and dehydration are associated with chronic kidney disease, in manual labourers⁴⁻⁶ especially in low- and middle-income countries in tropical and subtropical zones.⁷ For all workers they have negative effects on productivity, and cause poverty and socioeconomic inequity.⁴

In response to the Paris Agreement and the IPCC report,⁸ Costa Rica developed a National Policy on Adaptation to Climate Change 2018-2030⁹ and a National Decarbonization Plan 2018-2050¹⁰ as tools for adaptation and mitigation. Despite clear policies, progress is slow on key issues, including actions to improve governance. There is a lack of clarity on how sectors and institutions will be integrated towards achieving reported objectives.¹¹ Furthermore, in key areas like transport, Costa Rica has increased its fossil fuel use and ranks third in Latin America in the number of private vehicles per thousand inhabitants.¹²

Over the past three decades extreme climate events and variations in seasonal weather patterns have had a high impact on health¹³, both

directly (e.g., increased morbidity and mortality rates) and indirectly (e.g., food insecurity).¹⁴ Extreme weather events, such as heat waves and heavy precipitation, are occurring with greater frequency and intensity⁸, posing new threats to health systems¹⁵. Climate change has repercussions on physical and mental health as well as social well-being.¹⁶

Climate change magnifies inequalities. Low- and middle-income countries are more affected as they are, in general, exposed to higher temperatures and their economies are largely based on agriculture and outdoor activities exposed to extreme weather events. Adaptation measures are not always adopted.¹⁵ In Costa Rica, according to the State of the Nation 2020 report¹⁷, COVID-19 has increased poverty and social vulnerability. Within months, between 3 and 8 percent of the population reached extreme precarity because of rapid growth in unemployment.

In this policy brief we analyse the evidence provided by the 2021 global Lancet Countdown report for Costa Rica and propose three fundamental areas for intervention.¹⁸ Due to the climatic and labour characteristics of Costa Rica, the number of working hours lost due to heat is critical and becomes a public health issue. Risk analysis at the local level is vital for effective mitigation and adaptation actions by communities. Finally, a topic widely discussed but on which there has been little progress is the improvement of transport to make it sustainable, healthy, accessible, and efficient. This brief is aimed at policy makers to serve as a guide for making decisions based on scientific evidence.

Recommendations

1

PROMOTE LOCAL INTERVENTION MECHANISMS AND TIMELY ASSESSMENT FOR HEAT STRESS IN THE WORKPLACE

Epidemiological evidence and climate data at regional level must inform adaptation and mitigation actions in agriculture, commerce, tourism, education and the health sector, particularly for vulnerable populations. Strategic plans and policies at the local level are required to prevent diseases related to heat exposure. Interventions to tackle heat stress in the workplace, and their timely assessments, are crucial, especially in communities where poverty and reduced access to health care are common.

2

DEVELOP AND IMPLEMENT ACTION PLANS TO REDUCE GREENHOUSE GAS EMISSIONS LOCALLY, TAKING A GENDER AND INEQUITY FOCUS ESPECIALLY IN VULNERABLE POPULATIONS.

A territorial approach to community health risks caused by climate change makes it possible to respond to the specific needs of the population. The 2021 global Lancet Countdown report data show that the number of municipalities that carry out these risk assessments must increase.¹⁸ Costa Rica should extend the current pilot program to 20 municipalities each year for the next 4 years, prioritizing the cantons with especially vulnerable populations for the first two years. The plans should include all relevant governmental institutions.

3

PRIORITIZE SCIENTIFIC EVIDENCE AND ENVIRONMENTAL OBJECTIVES IN DECISION-MAKING REGARDING TRANSPORT AND MOBILITY.

Country-level data indicate that improvements in the transport and mobility sector require a change in governance. The evidence calls for urgent action in this area because of its significant contribution to greenhouse gas emissions and a public health threat.

Changes in the workforce

The warming of the global climate system and its impacts in Latin America and the Caribbean have been visible for three decades.¹³ In 2020, for example, one of the three warmest years on record, there was a notable increase in the temperature of the Caribbean Sea with repercussions on climate regulation.¹⁹ In the 2021 global Lancet Countdown report, 295 billion potential working hours were lost globally as a result of extreme heat, 79% occurring in countries with low human development indices.¹⁸ In Costa Rica, a record 41 million potential working hours were lost in 2020, with the agricultural sector accounting for over one third.

In Costa Rica, the adverse impact of heat stress in the workplace has been reported in agricultural communities, especially in sugarcane workers in the province of Guanacaste.²⁰ The immediate health risks of heat stress are relatively well documented, but little is known about the long-term effects of repeated exposure to extreme heat. Chronic Kidney Disease of Nontraditional Cause (CKDnT), a serious public health problem,²⁰⁻²³ disproportionately affects males from low-income rural agricultural areas on the Pacific coast in the province of Guanacaste in the cantons of Liberia, Nicoya, Santa Cruz, Bagaces, Carrillo, Cañas, Abangares, Nandayure, La Cruz and Hojancha, and the canton of Upala in the province of Alajuela.^{20,22,23,24}

In these areas there is a marked dry season from November to April, and a rainy season from May to October, usually with clear mornings, significant morning heating and insolation (high solar radiation), and afternoon rains. During the months of July and August there is a decrease in rainfall, where insolation increases again. The way in which CKDnT develops in agricultural workers is not well understood, but occupational heat stress causes renal dysfunction in individuals.²⁵

While the Costa Rican government has enacted measures for the prevention and treatment of CKDnT, cases continue to increase including in areas not declared at risk.²⁶ It is vital for the country to develop strategic plans and policies at the local level to prevent and control diseases related to heat exposure. Interventions and their timely assessments in the workplace are necessary for the prevention of disease progression, especially in communities where poverty and reduced access to health care are common. To this end, the development of a standardized assessment method and identification of research needs on heat and its health effects in key populations should be promoted to provide data for decision making.

Climate change risk assessment at city level

Costa Rica is administratively divided into seven provinces and 82 cantons, which have had democratically elected local governments since 2002. The 2021 global Lancet Countdown report¹⁸ indicates that 81% of cities that participated in the Carbon Disclosure Project (CDP) survey have completed or are implementing climate change risk assessments. The most vulnerable populations were identified globally as the elderly, children, low-income households, and women.

Climate change risk assessment at the cantonal level will allow more targeted prevention, investment, policy development and action plans aimed specifically at the population at risk. Costa Rica has high spatial climate variability due to its complex topography and limited economic resources. In the CDP survey, cities in low- and middle-income countries are underrepresented in the sample. In the case of Costa Rica, only 14 out of a total of 82 municipalities participated in the survey. These corresponded to cantons with a high or very high human development index.²⁷

Of these 14 municipalities, eight identified risks at the level of health and public health systems associated with climate change, where vector-borne diseases (5 municipalities), interruption of health services

(4 municipalities) and interruption of drinking water, sanitation and wastewater services (4 municipalities) stood out.

The climate change risk assessment must guide policies and actions aimed at adaptation and mitigation at the local level, with a gender focus in the identified cantons, as well as considering the most vulnerable populations, with plans specifically directed at mitigating the greatest effects on these people. Progress at local level assessments has been made by pilot plans in 6 municipalities to address climate change policies. For example, the Municipality of Belén has a Cantonal Climate Change Strategy²⁷, but this represents less than 10% of the total cantons and does not include those with greater vulnerability.

Therefore, the country should extend this trial to 20 municipalities each year for the next 4 years, to implement risk assessments and specific action and mitigation plans. Priority should be given to the most vulnerable regions in the first two years. We emphasise that policies should be local and respond to the specific characteristics of each canton, since Costa Rica is characterized by regional heterogeneity in terms of income, human development, population, and climate.¹⁷

Healthy and sustainable transportation

Sustainable transport is fundamental to control CO₂ emissions. Around 18% of global CO₂ emissions come from the transport sector.²⁹ Despite efforts to electrify the vehicle fleet and increase the number of electric vehicles globally, they represent less than 1% of the total. Planning laws and policies aimed at improving transportation play an important role in public health, as the harmful effects of long-term exposure to particulate matter measured as PM₁₀ and PM_{2.5} from vehicles have been linked to increased total mortality, increased mortality from cardiovascular and cancer disease^{30,31}.

The situation in Costa Rica is critical and the 2018 State of the Nation Report¹² points out a governance and planning problem. Fifty percent of workers commute at distance from where they live. Up to 3.8% of GDP in economic costs is derived from transport congestion. There is a sustained growth in the use of fossil fuels for the transportation sector. In 2019, the consumption of these fuels was 8.2% higher than in 1992¹⁷. In addition, Costa Rica has the third highest number of private vehicles per thousand inhabitants in Latin America, and the transportation sector accounts for 66% of hydrocarbon consumption and 54% of CO₂ emissions¹². In 2019, 2,742,361 cubic meters (m³) of fuel were consumed, of which 1.4 million were gasoline and 1.3 million were diesel.¹⁷

The 2018 State of the Nation report identified five areas for attention: untangling governance bottlenecks, transforming public transport so that it is accessible and efficient, promoting changes in the vehicle fleet, encouraging non-motorized means of transport and, finally, improvements in road infrastructure.¹² In 2021, some progress has been made to fix these problems, but legal, administrative and political obstacles have a negative influence. For example, the political feasibility of projects such as public transport sectorization, multimodal

integration of public transport, and the urban train and electronic payment system are stagnant and politicized. The benefits, scientific evidence and links to health climate change are not considered a priority.

This has prevented real progress in other areas such as small steps with pilots in terms of sectorization of public transport and electrification of the vehicle fleet. Some local governments are exploring new forms of mobilization with the creation of bicycle lanes; however, these initiatives must be accompanied by road safety education and respect on the road to minimize accident risk to pedestrians and cyclists. Moreover, 30.6% of the deaths due to traffic accidents in 2018 correspond to this group (cyclist and pedestrians), considered as vulnerable road users.¹²

The National Decarbonization Plan 2018-2050 includes mobility and transportation¹⁰, and by 2020, of the 18 goals related to green transportation, 15 were initiated but only one has been concluded despite a deadline for meeting goals by 2022. Governance is where there seem to be more difficulties, since this section only refers to the proposed Law for the modernization of RECOPE and some changes in organization and planning at the transport ministry level. This section, which is the most urgent for the others to move forward, continues to be the weakness in the proposals to improve the sector.

We emphasize that the priority areas continue to be those outlined by the 2018 State of the Nation Report. We also recommend breaking down governance bottlenecks by prioritizing data, scientific evidence, public administration transparency and political will, so that the objectives set by the national plans can be achieved within the established timeframes.

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This policy brief was written by Dr. Zaray Miranda-Chacón, MD, PhD (School of Medicine, UCR), Ana Leonor Rivera Chavarría, MD, MSc (INCIENSA- UCR), Geison Rivera-Bermúdez (UCR), Dr. Adriana Troyo, PhD (CIET – UCR), Prof. Hugo G. Hidalgo, PhD (CIGEFI – UCR), and Prof. Eric J. Alfaro, PhD (CIGEFI- UCR). Revisions and extensive edits were provided by Michelle Soto, Licda; María Jesús Arias, Paula Barrantes, Oscar Campos, Angélica Carvajal, Adela Chacón, Valeria Díaz and Glen Martínez. Review on behalf of the Lancet Countdown was carried out by Marisol Yglesias-González, MScIH; Assoc. Prof. Andrés G. Lescano, PhD; Dr. Frances MacGuire, PhD and Dr. Marina Romanello, PhD.

THE LANCET COUNTDOWN

The Lancet Countdown: Tracking Progress on Health and Climate Change is a multi-disciplinary collaboration monitoring the links between health and climate change. It brings together lead researchers from 43 academic institutions and UN agencies in every continent, publishing annual updates of its findings to provide decision-makers with high-quality evidence-based recommendations. For its 2021 assessment, visit www.lancetcountdown.org/2021-report/

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The Lancet Countdown South America exists to promote research on health and climate change in the region, to encourage regional engagement on how climate change is affecting health across the continent, and challenge countries to respond in line with the evidence. It is the only academic centre in South America specifically researching climate change and health and is based at the Clima centre at Universidad Peruana Cayetano Heredia (UPCH) in Lima, Peru.

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