

# RESEARCH PROGRAM: Climate, environment and health (SG-CEH)

## Policy Brief | Project SG-CEH-10

### Integrating public health considerations into the energy and environmental assessment of buildings to reduce the risk of urban heat exposure: a case study from Chile

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#### The challenge

Climate change and the urban heat island effect are intensifying extreme temperatures in Chilean cities, which affects the physical and mental health of the population. In municipalities such as Quilpué (Valparaíso Region), indoor temperatures—especially in public housing—can increase exposure to heat, exacerbating inequalities and energy poverty.

Although Chile has made progress in energy efficiency regulations since 2006, discrepancies remain between building codes, actual living conditions, and user perceptions, highlighting the need to explicitly integrate health considerations into the energy and environmental assessment of buildings.

#### What was done

- The thermal conditions of homes in the municipality of Quilpué were analyzed.
- The urban areas with the highest heat exposure were identified.
- A statistical correlation analysis was conducted to examine the relationship between high temperatures and hospital visits.
- The measured data were compared with residents' perceptions of thermal comfort and housing quality.
- Energy policies and building codes implemented in Chile since 2006 were reviewed.
- Dialogue between the academic community, the public, and institutional stakeholders was promoted through participatory workshops.

#### Main findings

- There are areas of Quilpué with greater exposure to heat and a potential associated health risk.
- A correlation was identified between high temperatures and an increase in hospital visits.
- Residents perceive a deterioration in thermal conditions compared to more traditional types of construction.
- Recent regulatory improvements (such as the Energy Efficiency Law and the update of standards effective in 2021) show progress, but still require the explicit integration of health criteria.
- Energy poverty exacerbates vulnerability to heat waves.

#### The approach

The project adopted a transdisciplinary approach to link:

- Climate change and the urban climate.
- Energy policies and building codes.
- Indoor thermal conditions in homes.
- Health impacts and residents' perceptions.

The aim was to connect technical evidence (thermal measurements and health data) with users' experiences and the perspectives of public policymakers.

#### Impact and application

- It provides evidence for incorporating health criteria into energy and environmental assessments of buildings.
- Supports the design of green infrastructure and nature-based solutions to mitigate urban heat.
- Contributes to the formulation of policies that integrate livability, energy efficiency, and climate adaptation.
- Reinforces the need for early warning systems for heat waves with a health-focused approach.
- Promotes public consultation processes in the development of climate change adaptation policies.

#### Key lessons

- Adaptation to urban heat must integrate housing, energy, and health in a coordinated manner.
- Technical solutions must take into account users' experiences and perceptions.
- Energy poverty is a critical determinant of climate vulnerability.
- Climate and health education is essential throughout the entire life cycle.
- Resilient building policies must anticipate future climate scenarios.

#### Key message

It is urgent to integrate health, energy efficiency, and climate change adaptation into housing policies. The incorporation of green infrastructure, strict thermal standards, and early warning systems can reduce health risks and inequalities related to urban heat in the context of climate change.



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