Heat stress is a growing concern affecting health and well-being of populations worldwide. Air-conditioning (AC) can provide relief from high temperatures, but can entail high electricity demand and emissions. Future access to basic cooling is not only key for heat stress adaptation, but it also has important linkages with climate change mitigation and sustainable development goals.

We assess the evolution of the global residential “cooling gap” - the extent of population lacking access to basic cooling where needed - for the Shared Socioeconomic Pathways SSP1-3, and estimate minimum energy required for bridging this gap for the global South.

**Introduction**

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**Results: cooling gap projections**

Our results show that, despite improved AC access, cooling gaps will persist in all considered SSPs, with 1.9 billion (SSP1) to 5.1 (SSP3) billion people lacking access to basic thermal comfort by 2050. Cooling gaps are severe in many regions of the global South, especially in South Asia and Sub-Saharan Africa.

Technological improvements can reduce average energy requirements up to one-third while decreasing the need for active cooling, and can contribute to advancing multiple sustainable development goals.

**Strategies to reduce the cooling gap**

- Energy-efficient and affordable housing
- Electrification
- Efficient, affordable cooling technologies

**Conclusions**

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**References**


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