ACEF 2023: Navigating Toward a Carbon-Neutral Future through Clean Energy Solutions

Energy Efficiency for the Energy Transition Reducing Reliance on Conventional Cooling Systems Through Innovative Technologies

Elmar Asgarzade

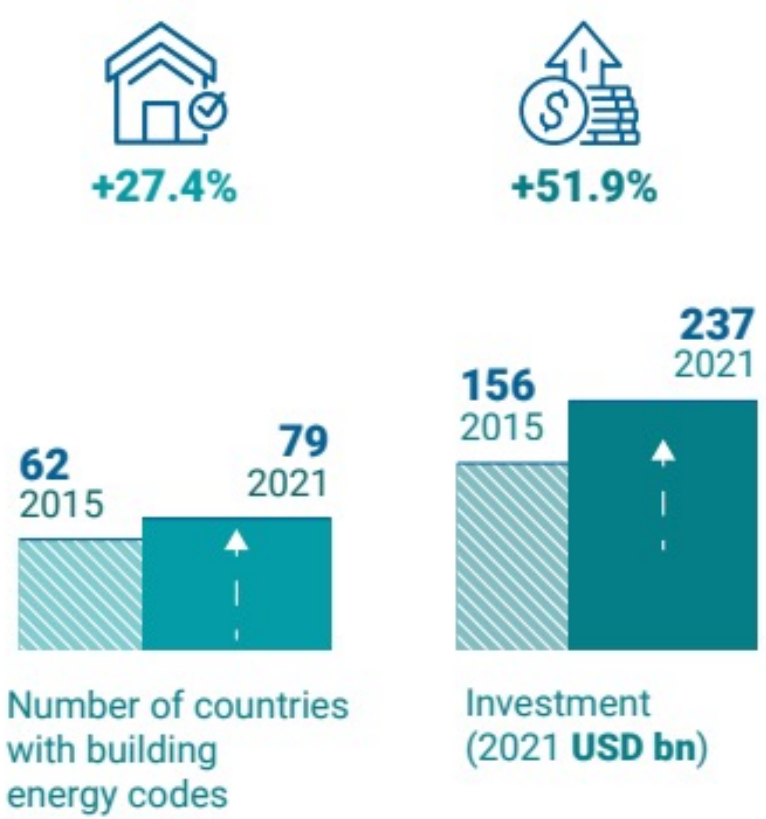
Director at Climasel

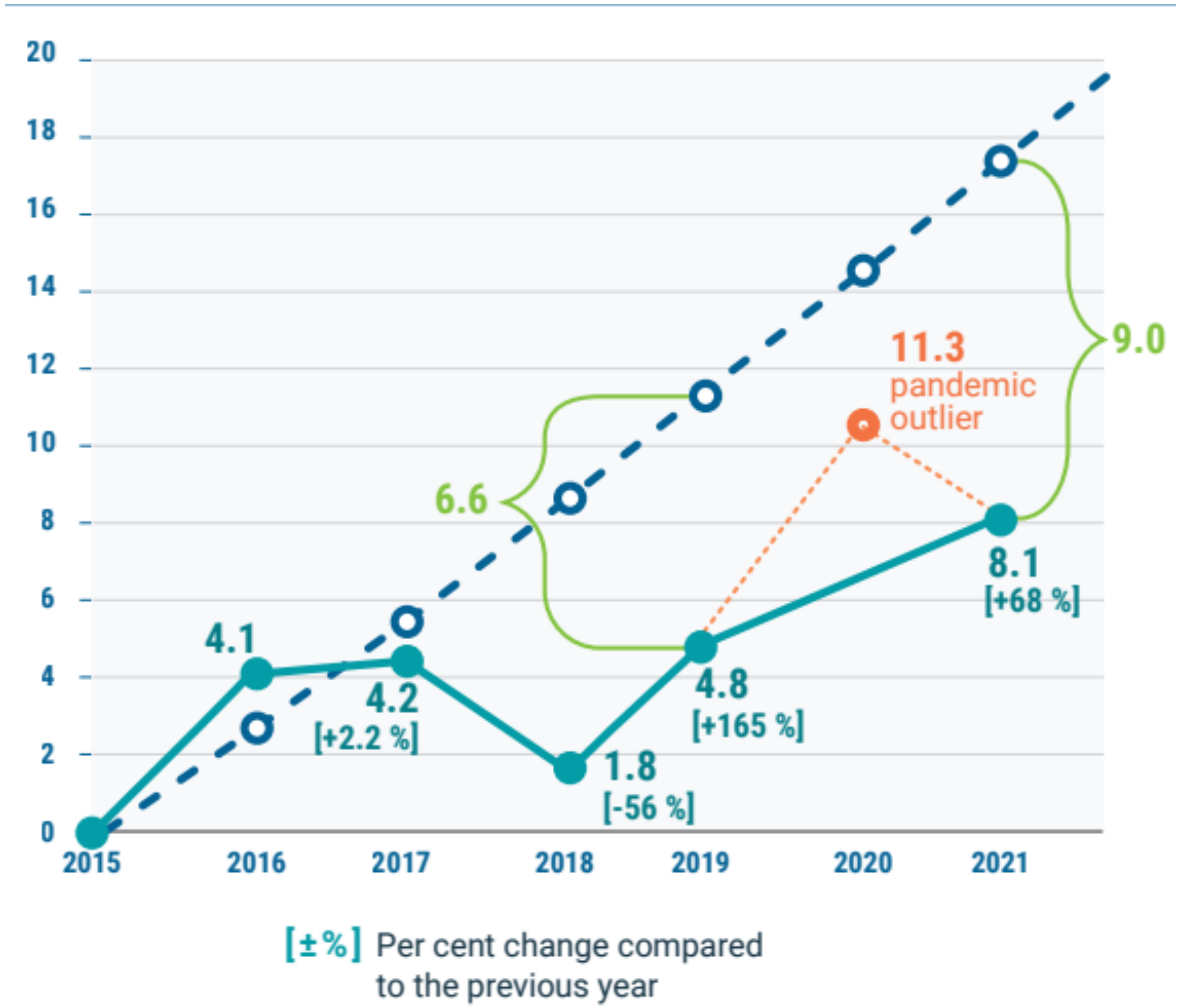
Confronting Building-Related Emissions and Energy Consumption

- Buildings account for nearly **40%** of global energy-related CO2 emissions
- Space cooling represents **16%** of a building's energy consumption
- Annual global energy costs for buildings exceed **$300 billion**
- Temperature extremes affect human health, productivity, and well-being

https://www.sciencedirect.com/science/article/pii/S2772940022000182

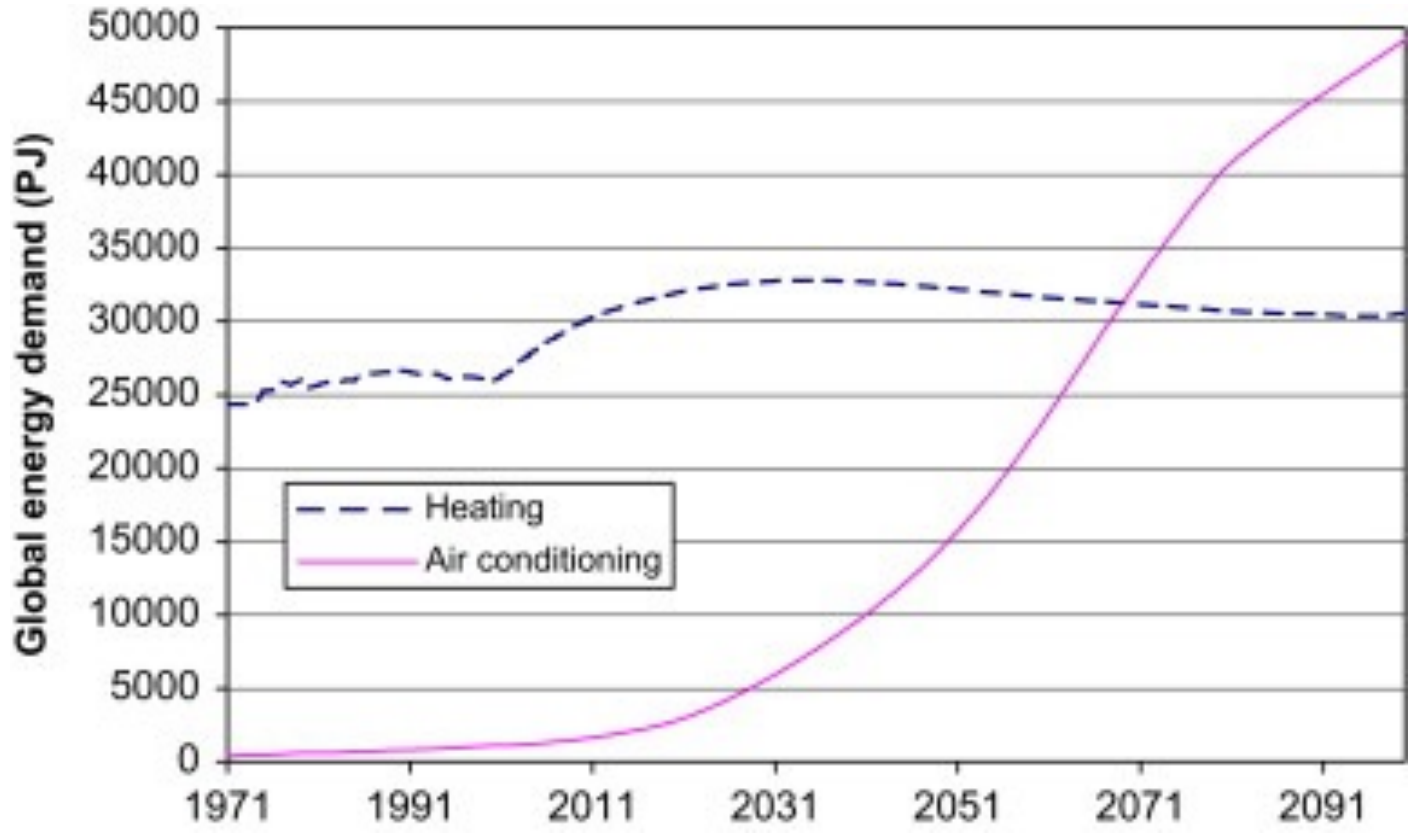
Decarbonization Progress Slows: An Unexpected Setback in Building Sector





2022 Global Status Report for Buildings and Construction

Global residential sector energy demand for heating and air conditioning



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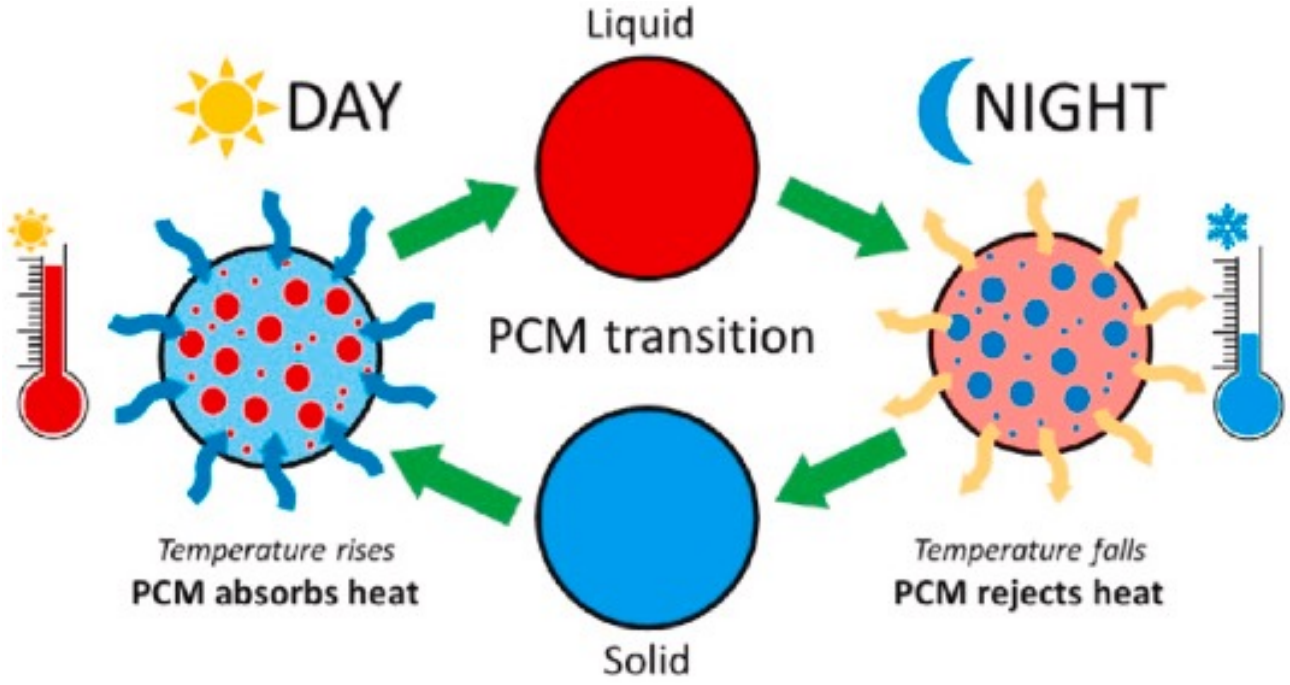
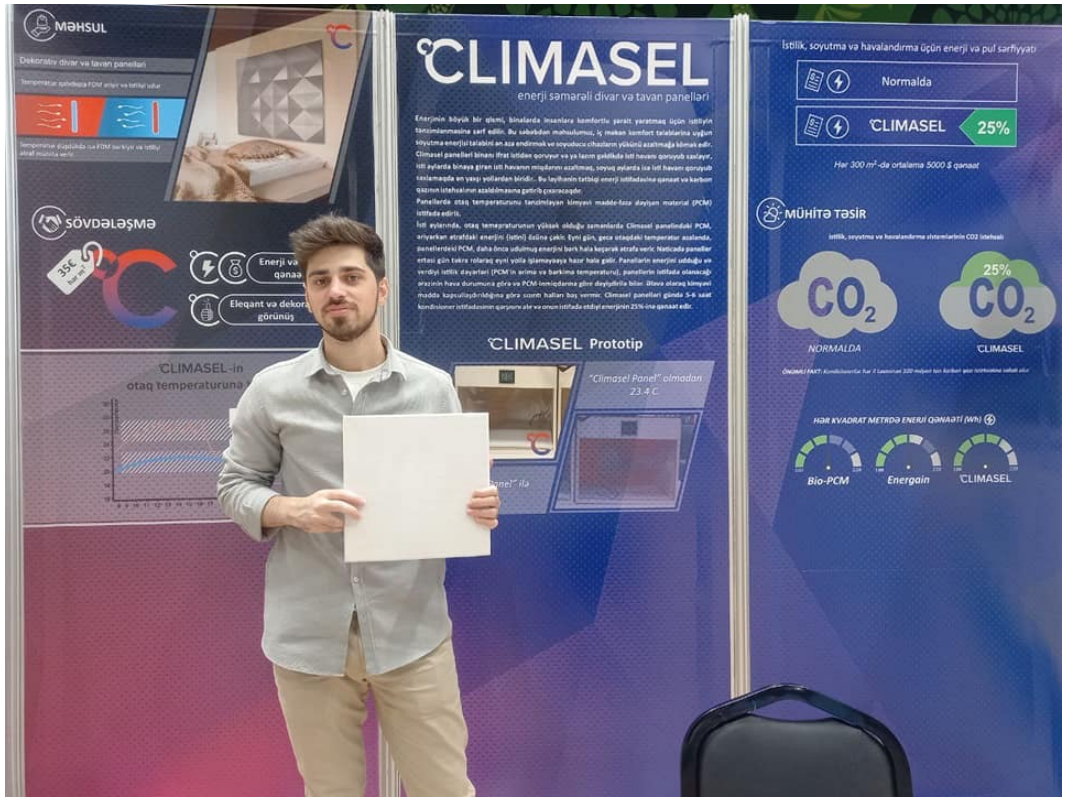
Phase change materials



Climasel - Addressing the Consequences of Rising CO2 Emissions

Our innovation is an energy-saving material(ceiling panels) that naturally cools buildings using phase change technology, offering an eco-friendly and cost-effective solution.

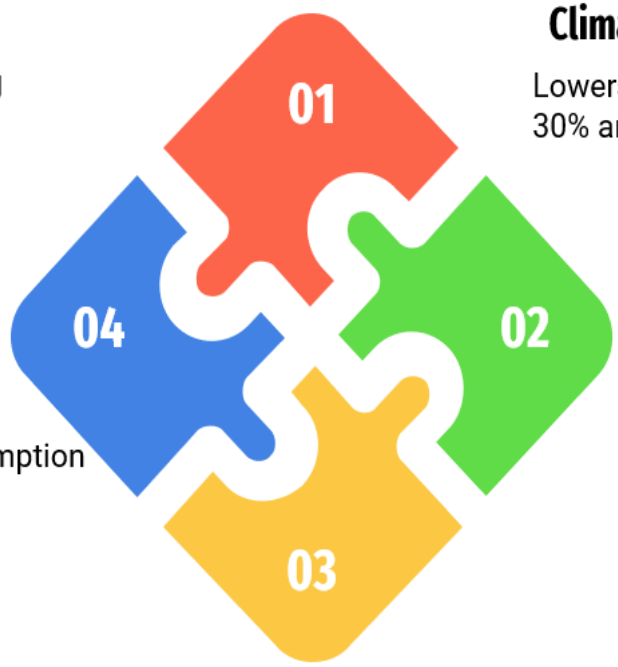


Cutting-Edge Solution

New, advanced building materials designed to naturally cool buildings

Climate-Friendly

Lowers greenhouse gas emissions by 30% and fight climate change



Energy Efficiency

Reduces energy consumption by 25% for cooling

Enhanced Comfort

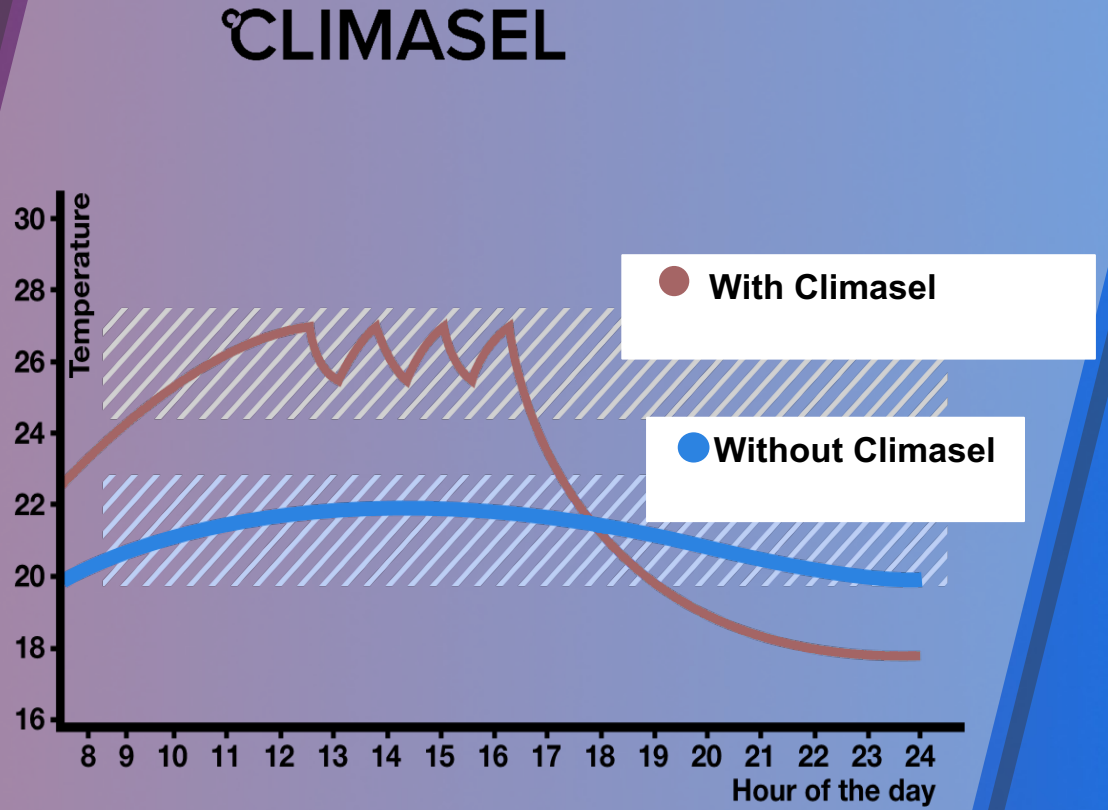
Supports well-being and overall quality of life

How does it work?

On a hot day these panels absorb the heat in a room and decrease the temperature

As temperature rises, panels absorb heat

As temperature falls, panels release heat back



Bio-MPCM Technical Specification

Description
Hybrid Bio-based materials and polymer composition

Base Material
Bio-based

Appearance
White

Property	Value	Test Method	Test Conditions
Melting Temp. (°C)	23	T - History	at 27 °C (max) Bath
Freezing Temp. (°C)	22	T - History	at 17 °C Bath
Liquid Density (kg/m^3)	1540	ASTM D891-95	at 32°C
Solid Density (kg/m3)	1840	Internal	at 12°C
Latent Heat (kJ/kg)	185	Calorimeter	solid PCM taken at 12°C
Specific Heat-Liquid	0.73	Calorimeter	at 32°C **(kcal/kg.K)**
Sub Cooling	Low	T-History	
Thermal Stability (cycles)	~3000 Internal		
Max. Operate Temp. (°C)	~80		

Value Proposition

Witout Climasel

CLIMASEL 25%

Average: For each 300 m2 customer saves 4200 € or 3000kWh annually

Pilot test with Baku Higher Oil School

01

- Location: Baku Higher Oil School, Azerbaijan
- Duration: May 2022 - September 2022
- Room size: 50 square meters

02

- Installation of Climasel panels on the ceiling
- Electricity cost: 0.047 USD per kWh

03

- Energy consumption reduced by 22%
- Daily energy consumption for cooling reduced from 30 kWh to 23.4 kWh

04

- Total energy savings during the pilot test: 990 kWh
- Cost savings: 46.53 USD

Effect of Climasel towards SDGs

Climasel's solution addresses SDG 13 (Climate Action) by reducing energy consumption and CO2 emissions in the building sector in Asia and Africa, significantly impacting the transition to a low-carbon future.

The solution contributes to SDG 9 (Industry, Innovation, and Infrastructure) by driving economic growth and innovative capacity by providing energy-efficient cooling solutions and promoting more sustainable building practices.

Climasel's solution supports SDG 11 (Sustainable Cities and Communities) by designing cities or urban spaces to be safe, smart, and provide a high quality of life by improving indoor comfort, reducing health risks, and promoting sustainable building practices, leading to a more sustainable, low-carbon urban environment.