



Virtual Regional Technical Expert Meetings on Mitigation 2020

**CLIMATE SMART COOLING SOLUTIONS FOR SUSTAINABLE
BUILDINGS IN EASTERN EUROPE AND WEST ASIA**

27 August 2020 | 10:00 – 11:30 CEST | Virtual event



A perspective from West Asia

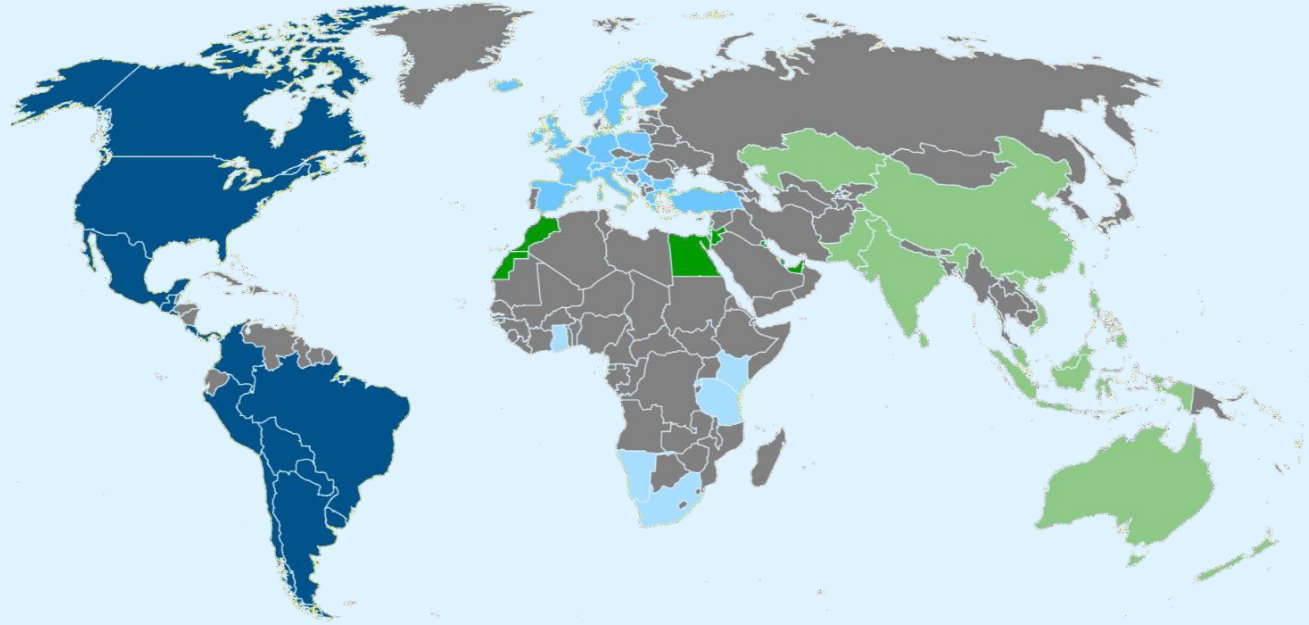
- Introduction
- Global perspective
- Regional overview
- Case study
- Conclusions

World Green Building Council

The World Green Building Council (WorldGBC) is a global network leading the transformation of the built environment to make it healthier and more sustainable.

Collectively, with our Green Building Councils (GBCs) in around 70 countries, we accelerate action to deliver on the ambition of the Paris Agreement and UN Sustainable Development Goals (SDGs). We do this by accelerating critical systems transitions that need to take place across the sectors to achieve our goals for a sustainable built environment.

We are committed to catalysing the uptake of sustainable buildings for everyone, everywhere.





**Buildings are a critical solution
to climate change**



The challenge we face

104 of 194 countries that signed the Paris Agreement have committed to improve building energy efficiency to meet mitigation targets.

Only **62** countries currently have building energy codes.

By **2050**, the global population will increase 27% to **9.8bn** and global floor area will increase by **100%**

Climate Action

Buildings are responsible for **39%** of global carbon emissions
Energy demand will increase by

50% by 2050

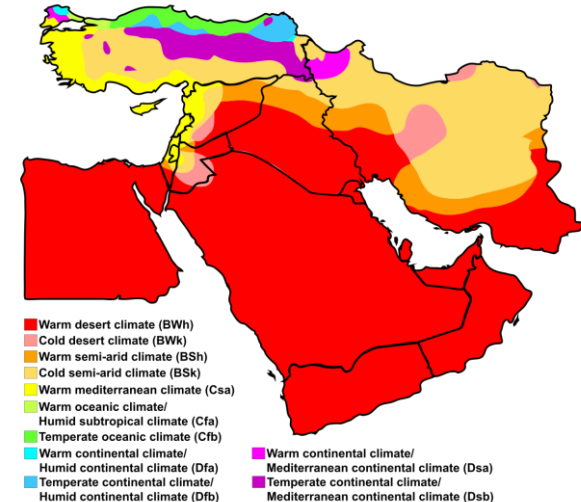
Using air conditioners and electric fans to stay cool accounts for nearly **20%** of the total electricity used in buildings around the world today.

<https://www.iea.org/reports/the-future-of-cooling>

West Asia

- Huge variance in climatic conditions
- Huge variance in income levels
- Different building standards and techniques
- Variance in green building market maturity levels.

Middle East map of Köppen climate classification



Regional Case Study

Passivhaus - Qatar

Hot Desert Climate

- Generally hot, sunny and dry year-round, with intensely hot summers.
- Average temperatures are normally between 29 and 35 °C, midday readings of 43–46 °C are common.
- The world absolute heat records, over 50 °C, are generally in these regions, where the heat potential is the highest on the planet.
- 80% of energy produced is used for cooling services¹

Source: <https://en.climate-data.org/>

¹ Energy Reports. Volume 6, Supplement 1, February 2020, Pages 587-592

Project Partners



AECOM

Scientific Partners
SIEMENS



TEXAS A&M
UNIVERSITY OF QATAR



consultant



OPERATIONAL PERFORMANCE MONITORING



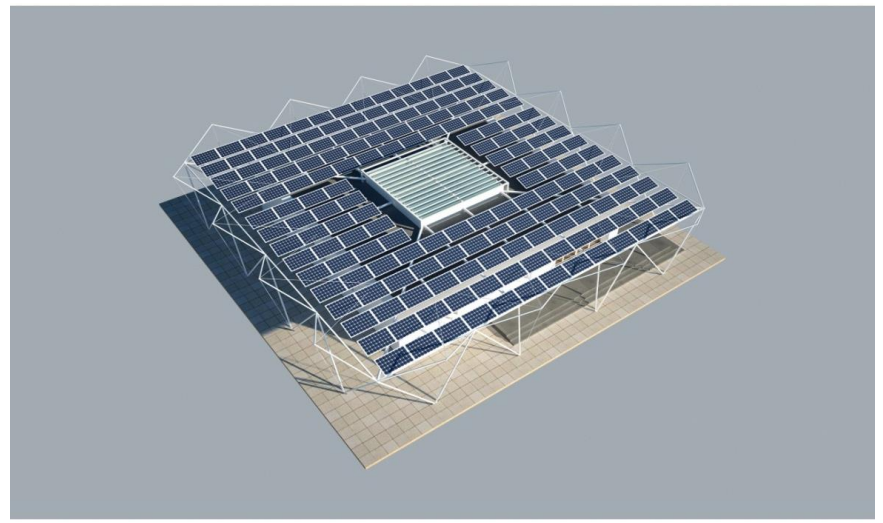
contractors

suppliers



GE Energy





Project Aims



Reduces annual operational energy consumption by 50% compared with the Business as Usual Villa



Achieves a 50% reduction in annual water consumption compared with the villa



Achieves a 50% reduction in annual operational **CO₂e emissions** compared with the Villa;



Additional construction (capital) costs of achieving the above performance in the Passivhaus villa is no more than 15-20% of the capital cost of the villa



Passivhaus villa can be **certified** to have met the Passivhaus standards by the Passivhaus Institut



Design Features

- Externally applied EPS insulation – 370 mm
- 200 mm masonry wall (compared to 150 mm external /100 mm internal concrete block with 50 mm air gap in BAU)
- Triple glazed windows and doors
- Maximum air tightness
- Skylight in atrium with louvres that open/close with sun angle
- PV array for daytime power
- Black and grey water recycling (Bionest)

For more information please contact: qatargbc.org

Conclusions

Thank you!

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