

COMPETITION BRIEF

The Cool Home-Low Cost Design Competition



Cambodia Passive Cooling Community of Practice (CoP)

THE “COOL HOME-LOW COST” CHALLENGE

Designing an Innovative Passive Design & Affordable Flat House for Cambodia

-  **1st Prize**
\$700 USD+ Professional Certificate
-  **2nd Prize**
\$500 USD+ Professional Certificate
-  **3rd Prize**
\$300 USD+ Professional Certificate
-  **Each Top 5 Shortlist will receive additional \$500 USD to build a physical model**

REGISTER NOW

Registration Deadline: 30 April, 2026

Register Link:
<https://forms.gle/faex7Syqg4r2WBrcA>



DESIGN
COMPETITION

ARCHITECTS
ENGINEERS
Student or
Professional

Passive Cooling Adaptation and Affordable Flat House in Cambodia

Project: Capacity Building and Support for Developing Building Energy Codes in Cambodia

Implemented by:

UN ESCAP

Institute of Technology of Cambodia (ITC)

China of Academic of Building Research (CABR)

In collaboration with: Ministry of Land Management, Urban Planning and Construction

Funded by: Energy Foundation

1. Introduction: The Passive Cooling Revolution

The Challenge

Every home is a shelter, but in our rapidly warming climate, the standard Cambodian "Flat House" has become an oven. In Phnom Penh, the reliance on mechanical cooling (AC) is skyrocketing, leading to high electricity bills and environmental degradation.

The **"Cool Home – Low Cost" Design Competition** invites multi-disciplinary teams to design a New Standard: an affordable, passive flat house typology capable of maintaining thermal comfort without heavy reliance on AC. We seek an architecture that goes beyond aesthetics; one that proves—through data and simulation—that comfort can be affordable.

2. Competition Overview

The 4m x 16m "Flat House or Town House" is the dominant urban typology in Cambodia. We have established ambitious targets: increase natural lighting, maintain cooler indoor temperatures while reducing the need for air conditioning; and reduce household energy costs. All while using commonly available materials and construction techniques.

Note: Keep standard or increase standard of construction materials.

The Three Pillars of Passive Design

- a) **Solar Protection:** Roof and wall insulation, architectural shading (i.e. overhangs, vertical and horizontal louvers), cool paint, and high-performance building glazing and materials.
- b) **Natural Ventilation:** Enable cross ventilation, pitched and ventilated roofs. solar chimneys and atriums.
- c) **Daylighting:** Optimize window-to-wall ratio, consider window placement and shading to provide light without heat radiation.

Core Technical Requirements

Feature	Specification / Rigorous Target
House Size:	4m Width x 16m Depth
Setbacks:	Front 6m / Back 2m
Total Floor Area	128 sqm (Dual-story configuration)
Cost Target	\$250 - \$300 per sqm
Difficult Scenario	Must be designed for West-Facing/South-Facing orientations

3. Objective of the Competition

The objective of this competition is to establish a research initiative that bridges the gap between innovative design and national regulatory development.

By challenging participants to a flat house, the competition serves as a small-scale study to identify and validate passive cooling strategies, sustainable material usage, and construction practices specifically in the climate of Cambodia.

The findings that came from the technical evaluation of these designs, particularly regarding thermal comfort and energy efficiency will provide the necessary evidence to support the government's development of future building codes. Furthermore, by managing this competition process, ITC strengthens its institutional capacity and reinforces its role as the lead technical advisor to the government on national building performance standards.

4. Registration and Team Criteria

Team Structure: To ensure integrated design, teams must be multidisciplinary.

Minimum 5 Members:

- At least one architecture student
- At least one civil engineering and one mechanical engineering student
- Two Mentors: one academic lecturer and one professional architect mentor.

Jury Prestige

Our jury consists of experts representing the developer, academic, and architectural sectors. Minimum requirement of jurors is to hold either a Master's degree with more than 5 years of experience, a PhD with more than 3 years of experience, or a Bachelor's degree with more than 7 years of industry experience.

- 3-5 Jurors are expected.
- Appreciation: Certificate of appreciation from MLMUPC and ESCAP.

5. Prize and Award

Sponsorship funds are applied directly to the realization of physical prototypes and the rewarding of technical excellence.

- **1st Prize:** \$700 Cash + Professional Certificate
- **2nd Prize:** \$500 Cash + Professional Certificate
- **3rd Prize:** \$300 Cash + Professional Certificate

Physical Model Fund: A dedicated **\$500 grant per team** for the **Top 5 finalists** to build a scale 1:50 architectural physical models.

6. Submission Materials

Participants must submit/present the following deliverables. It is mandatory to use the Team ID received after confirmation registration email.

A) Two A1 Boards (Digital PDF & Printed)

- Content: Architectural drawings (Plans, Sections, Elevations), Construction Details, and an "Exploded Axonometric" showing the passive cooling strategy.

B) The Simulation Report

- Content: A technical report generated from the software (e.g., DesignBuilder) comparing your design against the "Base Case" (Standard House).

C) The Bill of Quantities (BoQ)

- Content: 1-page Excel summary estimating the material costs to prove the design fits the low-cost budget.

D) The Physical Model of Passive Technique (Scale 1:50)

- Content: An architectural model to visualize the space, aesthetics, and construction technique. For the performance of the house, will be evaluated by the simulation report
- Note: 5 shortlists will receive 500 USD to build the physical model

7. Competition Timeline:

Phase	Milestone	Date
Launch	Brief Release & Registration	Registration Deadline: 30 April, 2026
Kick-off	Orientation Workshop: Competition introduction, DesignBuilder & Passive Strategy	Early May, 2026. Exact date to be confirmed
Semi-Finals	Poster Presentations & Top 5 Selection	Mid July, 2026 Exact date to be confirmed
Grand Finale	The Grand Pitch & Awards Ceremony	Early Sept, 2026 Exact date to be confirmed

Now is the time for climate-responsive housing. Join us in cooling Cambodia.