

The Making of A Tropically Adopted Energy Performance Certificate for Residential Buildings

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ABSTRACT

Over the past decade, several national Green Building certification indices have emerged around the globe. The American LEEDS, the German DGNB or the British BREAM are all considered comprising measurement tools for environmental-friendly housing. Since 2009, the application of countries in the Northern “colder” hemisphere has been adopted towards tropical countries (e.g. the Singaporean Green Mark and the Malaysian Green Building Index).

In contrast, for a different market niche, the Tropically Adopted Energy Performance Certificate of green and energy efficient building (TEPC) translates the United Nations’ **triple bottom line** principle (**planet, people, profit**) into green building sustainability (planet), thermal comfort (people) and affordability (profit). Dwelled upon the tradition of five countries in the European Union, the TEPC initially targets affordable residential buildings. In its parenting countries, the tool has been especially developed and revamped for high and mid-class households to green buildings and help to reduce global warming on a wider scale.

Hence, by its comparably simple and transparent energy audit, the 2012 created TEPC can check any kind of building upon four criteria: (1) its contribution to reduce CO₂, (2) its transmission rate shielding a building’s envelope against the effects of the tropical heat, (3) gaining tropical adopted thermal comfort and (4) referring total cost of ownership to green the building further. All of the four dimensions are measured in scales between blue / green on one and red on the other extreme, potentially in compliance with individual national energy regulations.

After the elaboration and prior presentations in Malaysia and Colombia, this research targets at the tool’s implementation for countries in the tropical belt. The action research comprises of two phases which are interrelated. The pilot started with the set up of test rooms and mock-up buildings (phase 1: pre-study). By its results, the tool reaches out towards phase 2 which defines and refines the four elements above to shape a comprising tool. Three tropical case studies in residential areas for retrofitting (village house, terrace house and semi-detached house) will look into the practicability of the approach. Final considerations will be made to derive a holistic certification by an internationally accredited certification board.

Key Words: CO₂-Emission, Energy Audit, Passive House, Green Building Certification