

Future Homes should be Low Carbon Homes

Globally, around 40% of raw materials and energy and 16% of the annually available freshwater is consumed by the housing/building construction sector. The housing construction sector is regarded as a major contributor of climate change, accounting for 35% of global carbon dioxide (CO₂) emissions. According to Intergovernmental Panel on Climate Change (2007)¹, the greenhouse gas emissions (GHG) from the building sector in 2004 were 8.6 GtCO₂ (of which 5.6 GtCO₂ from electricity use); 0.1 GtCO₂-eq N₂O; 0.4 GtCO₂-eq CH₄ and 1.5 GtCO₂-eq halocarbons (including CFCs and HCFCs due to refrigerants, air conditioners, and insulation). The single largest users of energy in residential buildings is space heating (Figure 1), followed by water heating and electrical appliances, of which heating accounts for the largest residential energy consumption and emissions of CO₂ (Figure 2).

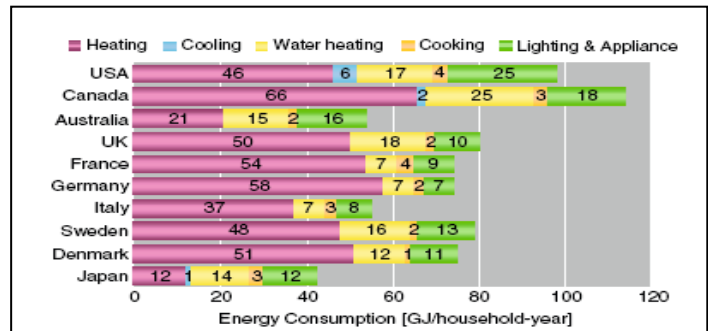


Figure 1 : Annual national average of residential energy consumption of some selected developed countries in 2001²

There is an urgent need to ensure that new homes are more sustainable and cause low CO₂ emissions. Low carbon homes or environmentally friendly house (Eco-house) or sustainable house or green buildings can be defined as a house that provides comfort and a healthy habitat but which also causes low adverse impact on the environment. The cost effective technologies that can abate GHG emissions from buildings include passive solar design, high efficiency lighting and appliances, highly efficient ventilation and cooling systems, solar water systems, insulation materials and techniques, high-reflective building materials and multiple glazing.

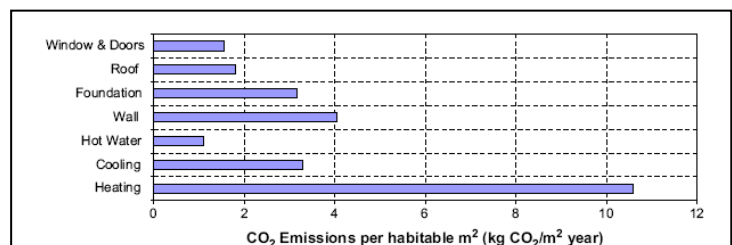


Figure 2 : Comparisons of CO₂ emissions per habitable square meter³

In short, low carbon homes should have devices to conserve water and use environmentally friendly materials (such as renewable materials), non-toxic paint in building, and maximum use of natural light (Figure 3). It should have native plants in the garden to cut water use, a rainwater tank for watering the garden, toilet flushing and the laundry, water efficient showerheads, taps and dual flush toilets. Deciduous trees can be planted in front of windows to block excessive sun in summer and when their leaves fall off in winter it also allows the light through (Figure 3).

To reduce the impact of climate change and to save our planet, we will be in need of all measures possible which include the building of low carbon or zero carbon homes in the future. In this regard, the UK government (code for sustainable homes) has proposed that all new homes will have to be zero carbon by 2016. The Australian Government also took some initiative through new building regulations (e.g. BASIX, the Building Sustainability Index) to ensure that new homes are designed to use less potable water and be responsible for fewer greenhouse gas emissions (such as CO₂ emissions) by setting energy and water reduction targets for houses and units. For low carbon homes and energy efficient buildings this requires an integrated approach involving architects, engineers, environmentalists, real estates and clients.

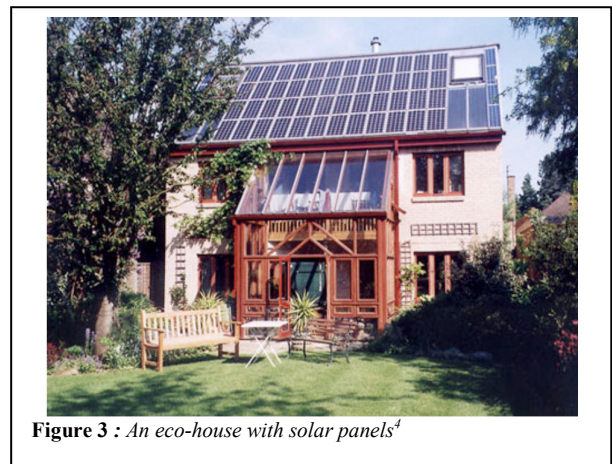


Figure 3 : An eco-house with solar panels⁴

References

- ¹Levine et al. 2007. Residential and commercial buildings. Chapter 6, page 387-446. In Climate Change 2007: Mitigation. Contribution of working group III to the fourth assessment report of the intergovernmental panel on climate change [B. Mertz et al. (eds)]. Cambridge university, UK and New York, USA.
- ²Iwafune et al. 2006. Study on resident energy consumption in the world (I. western countries). The 22nd conference on energy, economy and environment, pp. 156-162.
- ³Bribián et al. 2009. Life cycle assessment in buildings: state-of-the art and simplified LCA methodology as a complement for building certification. Building and Environment. 44 : 2510-2520.
- ⁴http://www.designbuild-network.com/speakerscorner/presentations/publication-99/SueRoaf_Electrolux.pdf. The article is based on various sources and was compiled by Golam Kibria, Ph.D in February 2010 for <http://www.sydneybashi-bangla.com> (15) for community benefits. Views expressed in this article are those of the author and are not to be taken to be the views of any others including third parties. The information in this article may be assistance to you but the author donot guarantee that it is without flaw of any kind and therefore disclose any liability for any error, loss or other consequences which may arise from relying on any information in this article.

