

# Methodologies used for determining the sustainability of residential and commeric...

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SUSTAINABILITY IN CIVIL DESIGN AND CONSTRUCTION Submitted by:  
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Development

In the United Kingdom, sustainability in residential and commercial development is governed by the Building Research Establishment Assessment Method (BREEAM) and the Code for Sustainable Homes by the Department for Communities and Local Government (2006). Both rating methodologies relate to the environmental impact of the development especially in carbon dioxide emissions, waste generation and energy consumption. The Code for Sustainable homes, for example, uses a 9 sustainable criteria which when combined result to a Level 1 (lowest) to Level 6 (exemplary) designation. The criteria are the following:

Energy/ CO<sub>2</sub> emissions - includes percentage improvement on fuel and power conservation, heat loss parameter of building fabric, energy efficient fittings and low or zero carbon energy technologies.

Water - amount of internal portable water consumption and system to collect rain for external use such as in irrigation or watering.

Materials - includes rating for the environmental impact of materials used and responsibility in its sourcing.

Surface Water Run-Off - concerned with measures to attenuate water run-off to natural water courses or municipal drainage and assessments related to flooding risks.

Waste - presence of household recycling facilities, management of construction waste and use of composting facilities.

Pollution - includes global warming potential of insulant, nitrous oxide

emissions

Health and Well-being - includes measures on good daylight use, sound insulation, private space and lifetime homes.

Management - provision of a home user guide concerning the operation and environmental performance of the home, a considerate constructors scheme, a commitment on construction site impacts and a security conscious design.

Ecology - measures to protect the ecology of the surrounding area.

Sustainability in Civil Engineering

For Civil Engineering design and projects, the United Kingdom industry uses the assessment and awards scheme CEEQUAL. Like the the Code for Sustainable Homes, the CEEQUAL also use a points-scoring assessment but instead of 9 criteria, CEEQUAL is made up of 200 exhaustive questions relating to environmental and social impacts of a project including resource usage, ecological impact, waste management, community relations, landscaping and even archaeology. Projects are graded as Pass (> 25%), Good (> 40%), Very Good (> 60%) and Excellent (75%). A CEEQUAL assessment is undertaken by a CEEQUAL-trained project member whose evaluations are checked by a certified CEEQUAL verifier.

Difficulties in using the Rating Systems

As with all point-rating system, the assessment can be affected by biases thereby leading to inaccurate points assigned. For example, the criterion MATERIAL in the Code for Sustainable Homes calls for a range of 0. 3 to 1. 8 points for sourcing building materials responsibly. While there is a technical guidance manual to help the assessor, the points assigned can still be subjective. There is also the question of whether the items such as

composting facilities and rain water collection will actually be used. The Code seems to check only for its presence as having a home-user guide seems to be enough to earn points and not its actual application. Essentially, the assessment methods provides no guarantee on the degree of sustainability that could occur.

#### References:

Department for Communities and Local Government, 2006. Code for Sustainable Homes: A step-change in sustainable home building practice. [pdf] West Yorkshire: Department for Communities and Local Government. Available at [www.planningportal.gov.uk/uploads/code\\_for\\_sust\\_homes.pdf](http://www.planningportal.gov.uk/uploads/code_for_sust_homes.pdf) [Accessed 26 February 2013].