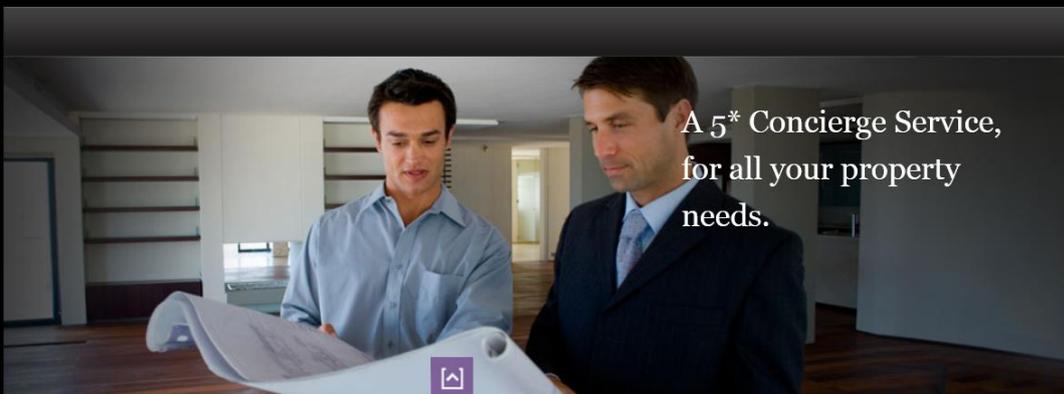


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Development Software Sustainability Assessments



As At
09 December 2012

Author
D Winsper

DEVELOPEMENT SOFTWARE

For

SUSTAINABILITY ASSESSMENTS

1. **Overview.** Due to the government's commitment through legislation¹ and in conjunction with the Department Of Environment & Climate Change² the CO² net worth has to be reduced from 695M^TCO² to 159M^TCO² by 2050³ with the 'Built Environment' responsible for 44%⁴. By 2016 new homes and schools built will require to be 'Carbon Neutral', this will apply in 2018 to public buildings and by 2019 to commercial buildings, thus Sustainable Assessment and the tools falling from this is a must, to ascertain if UK PLC is on track to meet these targets. These tools are currently in the guise of Integrated Sustainability Assessment Tools (ISAT) and Knowledge Management Systems (KWS), all of which are utilised in the Planning, Design, Construct and Operate phase of the 'Built Environments' lifecycle.

2. **Research.** Various papers have been produced, a fore runner for which is 'A Framework Model for Assessing Sustainability Impacts of a Built Environment'⁵, from the International Conference on Whole Life Urban Sustainability and its Assessment 2007. This paper highlights remote connectivity and attempts to internalise, external environmental, social, economic and natural resource costs, through a holistic sustainability accounting framework. It utilises a model from the oil industry (BP 1999), that of a Sustainability Accounting Model (SAM). The paper brings to the fore two challenges that need to be overcome before 'Sustainability Assessments', in whichever guise becomes 'Best Practice' for industry. The two key challenges are;

- a. Financial work is directed at corporate level, rather than the Urban Development level and as such has little financial incentive.
- b. The difficult and complex nature of Sustainability Assessment, in terms of scientific uncertainty and ideological diversity - requires a multi-dimensional approach (Bebbington et al., 2007).

Therefore, a full cost accounting methodology needs to be ascertained and integrated into a methodical assessment framework. This is proposed by the use of the Construction Sustainable Assessment Model (CSAM), an amalgamation of Building Whole Life Performance Assessment and Sustainability Accounting with a view to analysing the environmental, social and economic costs and benefits in monetary terms at different stages in the life cycle of a built environment.

3. **Products.** In the UK a Strategic Environmental Assessment (SEA) is mandatory for plans and programmes, in conjunction with Sustainability Appraisals in England and Wales.

- a. **BREEAM**⁶ (BRE, 1998, 2006) - BRE's Environmental Assessment Method. A BREEAM assessment uses recognised measures of performance, which are set against established benchmarks, to evaluate a building's specification, design, construction and use. The measures used represent a broad range of categories and criteria from energy to ecology. They include aspects related to energy and water use, the internal environment, pollution, transport, materials, waste, ecology and management processes.
- b. **LEED**⁷ (USGBC, 2007) - The Leadership in Energy and Environmental Design Green Building Rating System. LEED is a voluntary, consensus-based, market-driven program that provides third-party verification of green buildings. From individual buildings and homes, to entire neighborhoods and communities, LEED is transforming the way built environments are designed, constructed, and operated. Comprehensive and flexible, LEED addresses the entire lifecycle of a building.
- c. **CEPAS**⁸ - The Comprehensive Environmental Performance Assessment Scheme. This has been designed to set up a "green building" label system as a means of using market forces to promote environmentally friendly buildings, the Buildings Department commissioned a consultancy study to devise a system for assessing environmental design and performance of buildings.

- d. **BEES**⁹ - Building for Environmental and Economic Sustainability. The technique is based on consensus standards and designed to be practical, flexible, and transparent.
- e. **DQI**^{TM10} - The Design Quality Indicator. This is a method of evaluating the design and construction of new buildings and the refurbishment of existing buildings.
- f. **SPeAR**^{®11} - The Sustainable Project Appraisal Routine. The tool appraises projects based on key themes such as transport, biodiversity, culture, employment and skills.

None of the above address the Wellbeing and happiness index highlighted by Nobel laureate James Tobin and William Nordhaus in the 1970's, which is another avenue that should be pursued in the holistic approach to Sustainability Assessment.

4. Conclusion.

Whilst Sustainability Assessment Tools exist, at present there is no 'Best Practice' or 'Industry Standard' to concisely bring together the external environmental, social, economic and natural resource costs and internalise them to the 'Built Environment. All existing tools, as mentioned, go some way to the assessment of Sustainability, but none provide the holistic approach that encompasses wellbeing and happiness. Models are now forth coming that amalgamate ISAT and KWS methodology for assessment, such as Xing proposed Construction Sustainable Assessment Model (CSAM), cascading from is 'A Framework Model for Assessing Sustainability Impacts of a Built Environment'⁵

[E Signed]

David M Winsper MSc
MNAEA, MARLA, MInstRE

1118646

Principal
The Winsper Group

david@winspergroup.com
www.winspergroup.com
www.davidwinsper.com

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