

## SUSTAINABILITY SETS CHALLENGES – SHOULD WE BOTHER?

Pekka Huovila<sup>1</sup>  
 Group Leader  
 Concurrent Engineering  
 VTT Building Technology  
 Finland

### 1 Vision

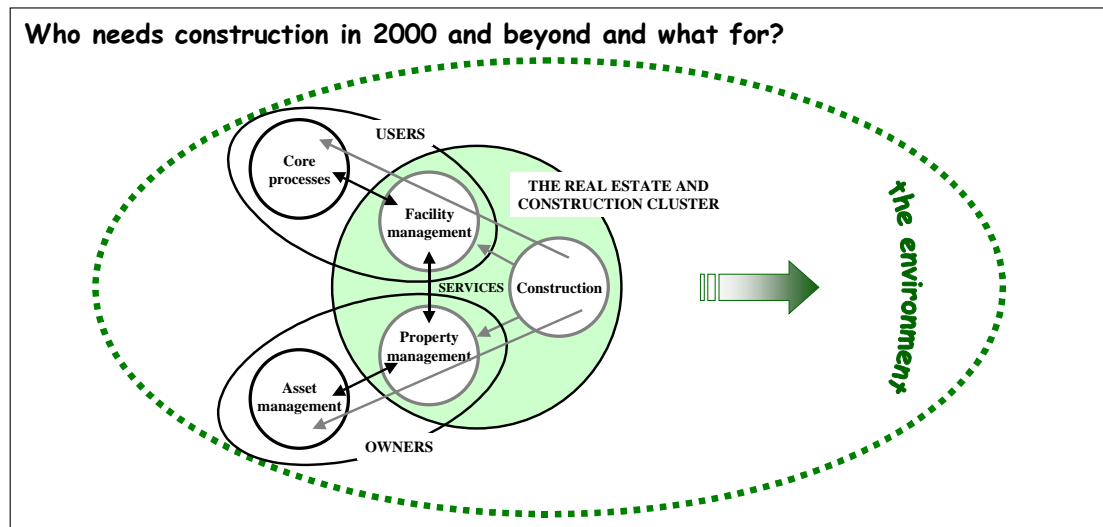
The author's vision for 2000 and beyond is, that:

- sustainability is the key factor in all decision making in design and construction processes
- the industry's respond to sustainability is the leading indicator of its competitiveness.

### 2 Justification

Construction sector has earlier considered its end products to have value as such. After a time it realised providing, together with other processes, services to the users of facilities. Another important observation was to consider construction as one of the processes offering assets to investors.

Quite recently construction, buildings and infrastructure are stated to be the main users of resources and the main producers of environmental burdens. The quality of the built environment is also claimed to contribute to the quality of life. This leads to the conclusion that the construction sector should without delay develop its processes and products towards sustainable direction, and to create innovative technologies to remedy the built environment.

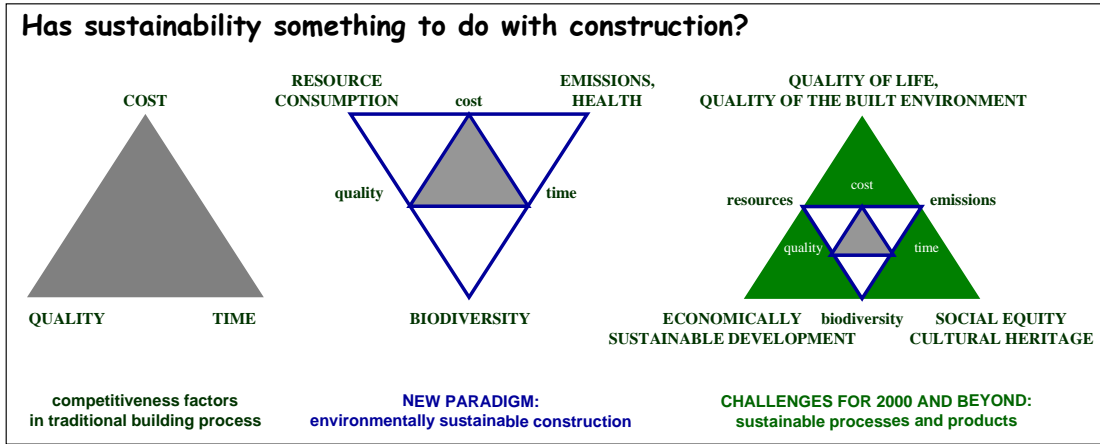


**Fig. 1: Construction is a service industry and the environment one of its clients.**

The concept of sustainable construction is not clearly defined. While traditional design and construction focuses on cost, quality and time, environmental objectives

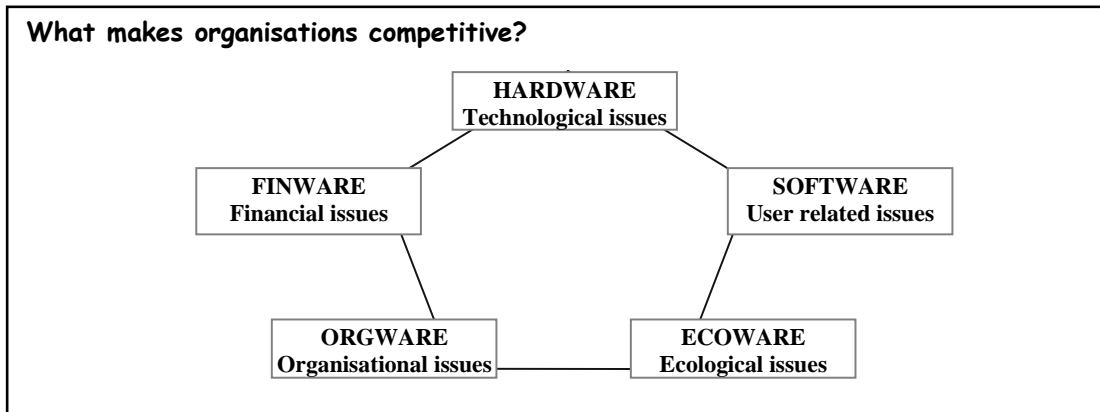
<sup>1</sup> [pekka.huovila@vtt.fi](mailto:pekka.huovila@vtt.fi), PO Box 1801, 02044 VTT, Finland

add to these criteria minimisation of resource depletion, reducing harmful emissions and maintaining a healthy environment together with conserving natural areas and biodiversity. That can be seen as a new paradigm to construction. In addition, economic, social and cultural dimensions of sustainability become very present especially in the global context.



**Fig. 2: The challenges for sustainable construction.**

The consumers are already conscious and concerned about their surrounding environment and the sustainability issues are today present. The environment, resource productivity, innovation and competitiveness are linked by an underlying logic and ecological issues belong to the critical success factors.



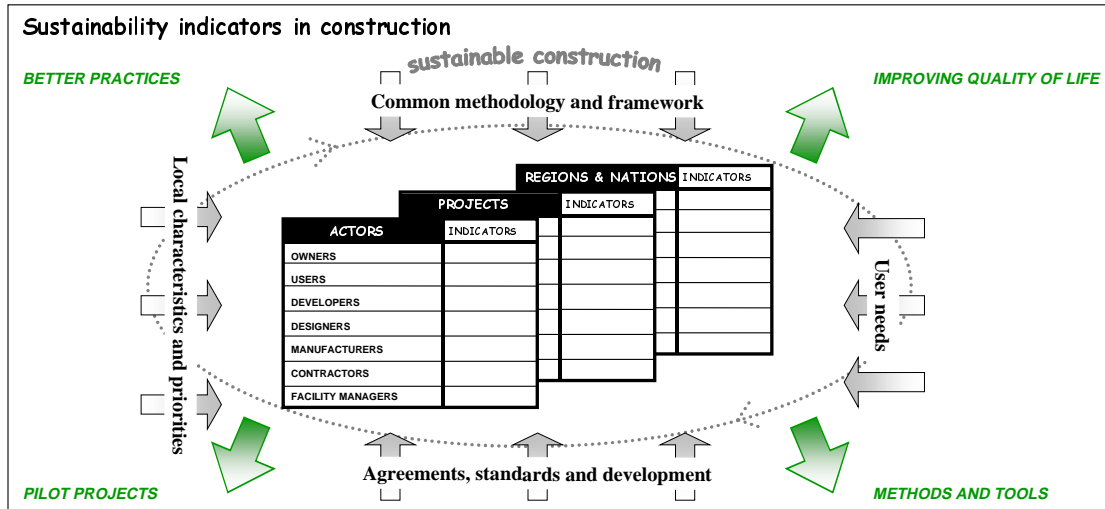
**Fig. 3: Critical success factors in a pentagonal model.**

### 3 Research needs

The main research objectives are:

- describing a holistic, comprehensive and explicit framework for sustainable construction
- exploring creative approaches to building performance assessment with generizable characteristics
- developing empowered decision support systems integrating the economic and environmental indicators

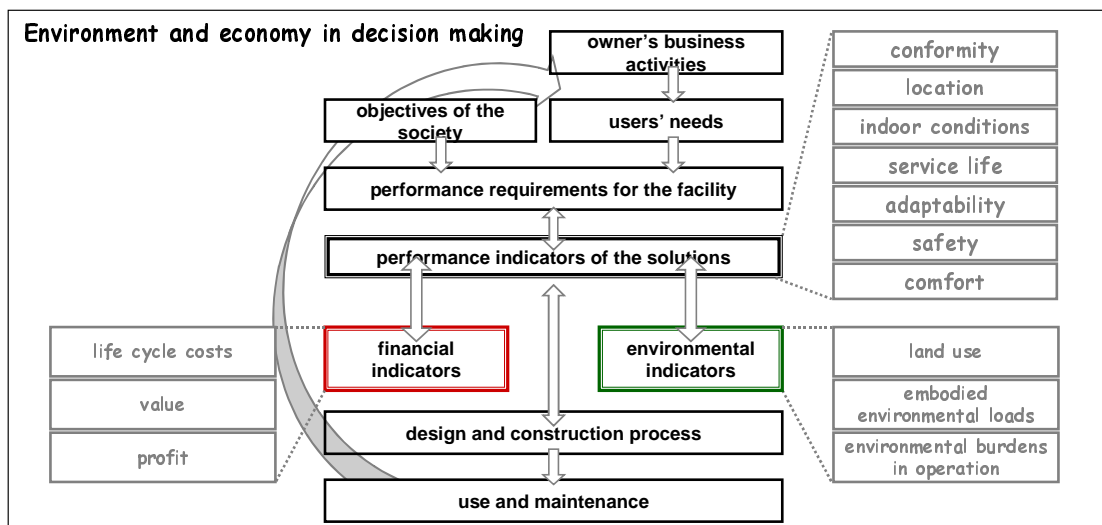
- establishing innovative mechanisms that offer incentives to profitable process and product improvement
- productive and qualitative implementation of these ideas, evaluation and continuous improvement.



**Fig. 4: Potential research themes in a sustainable context.**

#### 4 Personal background

The author’s professional background is in design and building practice. He currently leads the Concurrent Engineering research group at a Building research institute emphasizing at sustainable design, decision support systems, information networking and product data technology. His present research priorities are in sustainable life cycle processes and in empowered decision support systems.



**Fig. 5: The author’s approach to building process and decision making.**

## 5 Literature

The author has recently discussed the background issues in Huovila et al. (1998) and Huovila (1999). He illustrated the sustainable construction concept (*Fig. 2*) in Bourdeau et al. (1998) based on definitions of Kibert (1994) and ideas expressed by Vanegas and al. (1996). Porter et al. (1995) explained how environment is linked to competitiveness and e.g. Nijkamp (1998) has applied (*Fig. 3*) environmental issues in identifying success factors. Especially Brandon (1998), Hart (1997), Cole (1998) and Ofori (1992) considerably contributed in other value adding ways to the basis and origin of this short whitepaper.

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