Low Energy Districts

Decision-making processes for low-energy districts of mixed tenure

RESEARCH SCHOOL
INTEGRAL DESIGN OF STRUCTURES

Speerpunt BOUW

Subject

This research project investigates the diffusion of innovations in the construction of low-energy districts. The project draws both on deep connections to the construction industry and its professional practices, and on the potential to put this industry into contact with innovation, methods and changes, which take place in society and industry.

This research focuses on design processes. It looks into decision making throughout the process from design to realization and use and tries to find out which factors influence a general adoption of new districts with both residential and commercial buildings that use together a minimum of fossil energy.

The approach to be used is based on participative observation in design meetings, an analysis of best-practice cases and a survey of tenants'' views, all from the view point of the Diffusion of Innovation Theory, which examine the activities taking place during decision making processes and their interaction.

Fig1: Six main stages of the Innovation -diffusion process according to Rogers [Rogers, 2003]

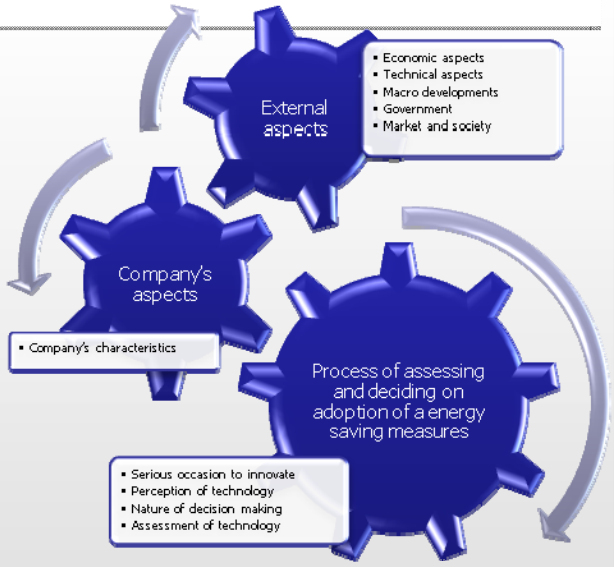

Fig2: A simplified integrative framework explaining diffusion of innovations adopted from Dieperink et al. (2004)

Goal

The objective of this research is to support a general adoption of low-energy districts. The main goal to be reached is elucidating the criteria for the roll-out of low-energy districts and including them in a protocol for the construction industry that enables successful realization of low energy districts.

Expected Results

The expected result is a protocol for decision making in the construction process that enables successful realization of mixed residential and commercial districts with a low use of fossil energy in the Netherlands. This will contribute to the body of knowledge in the field of process management and sustainable construction.

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Research Question

The problem to be solved by this research is how to diffuse in the construction industry the technological innovations needed for implementing low-energy districts.

Strategy

The Diffusion of Innovation Theory is applied to six low energy districts with the model of Dieperink et al. (2004) and related validated questionnaires. The completed questionnaires are used to describe the process of assessing and deciding that has taken place in these best-practice cases.

The draft-protocol for decision-making to realize low-energy districts is constructed by embedding the Critical Success Factors pertaining to technology, professional stakeholders and end-users in the standard Dutch building process.

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Preferred Partners Applications / Sponsors

The PIT foundation, BAM and TNO.

Prime Publication / Prototyping

PLEA 2009: Proceedings of the 26th International Passive and Low Energy Architecture. Quebec: Les Presses de l'Université Laval: Barriers to zero-energy construction; technically possible; Why not succeeding yet? (published) [*Abdalla et al., 2009*]

Research Period

2007-2011.