

## EXISTING SUSTAINABLE RENOVATION CONCEPTS

### Abstract

The term “sustainable” includes many environmental, social and economic indicators. In SuccessFamilies project, sustainable renovation is defined with emphasis on primary energy use<sup>1</sup>, but without disregarding the other indicators. A sustainable renovation concept is defined as:

*”A concept that results in cost-effective renovation of a house with substantially better energy performance, coupled to a mainly renewable energy supply system, and improved indoor environment. The level of total primary energy use should be preferably equal to a new house built according to standard building code requirements or better”<sup>2</sup>*

The studies in WP1 of SuccessFamilies indicate that the Nordic single-family house renovation market is dominated by a craftsman based approach with individual solutions, traditional warehouses ”do-it-yourself-shops” and some actors marketing single products. To speed up the implementation of sustainable renovation of single-family houses there is a great need for full-service packages including consulting, contract work, follow-up, financing and operation and maintenance. There are few Nordic examples of such service models for renovation of single-family houses which entered the market recently. The success of these concepts is yet to be evaluated.

One successful full-service package described in report D1.1 is a campaign by an energy company in Sweden who convinced 78 % of 456 owners of houses with resistance heaters to connect to its biomass based district heating network. The campaign was successful because of its package offer and information provision with emphasis on economic aspects and functional reliability.

The existing technical renovation concepts, typically focusing on application of only a few of the available technical solutions, have not been successful in realizing large scale energy efficiency gains. Key aspects of reaching a low primary energy level in connection with renovation are described in the form of typical energy renovation measures and technical principles of low energy renovation including recommended extent of measures.

Full service and technical renovation concepts should make it easy, simple and secure for the consumer to invest in a low energy renovation of their house. The building sector needs easy to use knowledge and initiatives which ensures that they can offer solutions which fulfil the demand for quality, economy and a simple process. To speed up the implementation of sustainable renovation of single-family houses, society needs to stimulate the process including better incentives structures, e.g. increased tax on energy and/or subsidy programmes. Combined with an outlook for rising global energy prices, sustainable renovation of single-family houses then has the potential to become an important market area in the future.

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<sup>1</sup> For a building, primary energy use is the energy used to produce the energy delivered to the building. It is calculated from the delivered energy and exported amounts of energy carriers, using conversion factors. Primary energy includes non-renewable energy and renewable energy. If both are taken into account it can be called total primary energy [1].

<sup>2</sup> A wider definition is for example used in the doctoral dissertation: “Towards Sustainable Renovation – Three research projects”, Marina Botta, School of Architecture, Royal Institute of Technology, Stockholm 2005