Available online at www.sciencedirect.com

ScienceDirect

Procedia - Social and Behavioral Sciences 220 (2016) 481 – 486

Procedia
Social and Behavioral Sciences

19th International Conference Enterprise and Competitive Environment 2016, ECE 2016, 10–11 March 2016, Brno, Czech Republic

Building renovation, but makes sense. Critical review of economic and environmental aspects.

Mario Sobolewski[a,*]

[a]*Department of Economics, Faculty of Business and Economics, Mendel University in Brno, Zemědělská 1, 613 00 Brno, Czech Republic*

Abstract

In this paper, the contradictions between the theoretical savings potential, the requirements of the legislator, the pollutants in and around the existing building and the real waste of resources represented. Here Furthermore, the health risks and the corresponding risks explains what approvingly, whether knowingly or unknowingly, every builder takes into account, as these are standard in almost all buildings available or installed. It has become difficult to environmentally friendly to build or rehabilitate.

Peer-review under responsibility of the organizing committee of ECE 2016

Keywords: poisoned materials; uneconomical renovation; rebound effect; exertion of influence, waste of resources

1. Theoretical problems

The statements made by Prof. Dr. Harald Simons, 2012 and the simplified calculation as: "energy upgrades are generally uneconomical in the sense that the energy cost savings do not cover the costs of the energy-efficient renovation. This already shows a simple thumb calculation: The average energy consumption of not significantly modernized one and two family homes is 167 kWh/(m²a) p.a. With energy costs of € 0.08 / kWh, energy costs amounted to € 13.36 / (m²a) before refurbishment. Assuming that left by an energetic redevelopment in fact 60% of energy can be saved – an ambitious reduction target, which is in reality rarely achieved – so the energy costs by € 8.01/(m²a). Within 15 years, the saved energy costs add up according to 120 € / m² and thus by no means on the clean-up costs, which are already in simple cases between 300 and 500 € / m². Even the integration of the energy-efficient

* Corresponding author. Tel.: +41 79 615 54 26
E-mail address: master.so@web.de

Peer-review under responsibility of the organizing committee of ECE 2016
doi:10.1016/j.sbspro.2016.05.523

renovation in a necessary anyway renovation leads only partly in the economy." (Simons, 2012) Find unfortunately at the present time is not the hearing, which would be necessary to carry out effective and meaningful renovations. One should look at in the context of the ecology and the economy effective and meaningful rehabilitation always. In the just mentioned report, important statements like „There is no general renovation backlog exists – as indeed also shows each visit to a family house area – always means an energetic renovation an early rehabilitation outside the remediation cycle. All feasibility studies, however, show that this is grossly uneconomical." (Simons, 2012) been set. There will always be uneconomic to bring forward such cycles since it always needs an economic payback. A building should not be constantly brought up to date, because there are always techniques and materials, which still have no long-term studies and are equally expensive.

2. Calculation of the rebound effect in facade insulation

This example shows quite clearly that the energy savings at a insulation thickness of this material tilts (Example in the diagram), of 54cm. One must assume that this example applies to all building materials or insulation materials. It is therefore essential to choose a sensible insulation thickness at facade insulation. Practically sees these sensible insulation thickness made so that the required U-value is reached. Basically good but only partly. Unfortunately, the legal requirements are only designed for energy savings in the area of effective use of the building and not to the observation periods prior to installation and the region after the end of the life cycle. It is important also to look at the area in front of the tipping point. Here the economy and ecology is already in danger. Likewise, there is a clear contradiction of optimum insulation thickness for environmental and economic consideration. More problematic is that it is unrealistic to incorporate the appropriate insulation thickness, since it does not make sense for many stakeholders to incorporate an insulation, for example, about 30cm thick. Basically, this also has implications for the utilization of land, boundary distances, land, the general construction law etc. As a result thereof, be put simply, the rooms in the area of small or it falls away spaces. Profitability is therefore in question, if you want to search for investment properties.

Excerpt from the calculation of energy:

$$Q(x) = n \times QT(x) + y(x)$$

n = Considered period in a
x = Required value: Optimal insulation thickness in m
Q_T = required heating energy
Y = Gray energy for the production of the insulating material

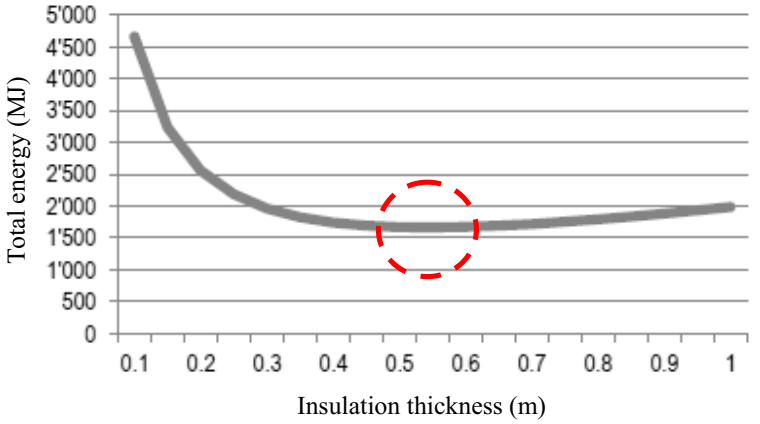

Fig. 1: Graphic total energy