# THE REDEVELOPMENT OF HISTORIC AND MODERN BUILDINGS USING TIMBER-STRAW CONSTRUCTION SYSTEMS[1]

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## ABSTRACT

Many European Research Bodies have studied the performance of buildings made with straw. Although straw is increasingly being used as a building material there is very little research into the potential of this material in Italy. There are no European product standards for ‘straw’ building material so CE marking of straw bales is not mandatory. So if straw is used as insulation in a building constructed in Italy reference is made to certification obtained from other European countries, such as Germany, Austria and France.

The deployment of 'straw' in both the reutilization and redevelopment of existing buildings and in new building constructions, can represent:

- an example of rational use of local resources (Horizon 2020: resource and raw material efficiency);
- a possible additional source of income for the agro-pastoral sector (Horizon 2020: Sustainable Agriculture);
- a low-cost technique that makes it possible to plan the production of constructive components capable of providing excellent energy performance, environmental comfort (Horizon 2020: safe, clean and efficient energy - wellness) and resistance to earthquakes.

This research was carried out on some Workers’ Club buildings in Tuscany; it studied the role of natural materials in reducing energy dispersion and improving environmental eco-sustainablity, within the general theme of eco-renovation of existing buildings. The environmental comfort and energy efficiency of the club buildings were assessed and the impact of applying an inner or external straw lining to existing buildings was evaluated. A constant goal of this research was to assess how this 'soft technology' can be applied to historic buildings.

**Key-words:** Straw, Architectural Restoration, Energy Efficiency, Self-construction, Environmental Sustainability.