

## Information Paper

# Building with confidence using renewable materials

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This Information Paper provides a holistic view of renewable building materials industry by outlining the drivers and barriers for these materials, listing the range of applications and highlighting aspects to consider in specifying these materials. It will be of interest to both construction professionals and the general public interested in renewable construction materials.

For the purpose of this publication, renewable materials are defined as construction products derived from agricultural crops grown for non-food uses, and other plant and animal sources. While earth and timber can also be classed as renewable materials, they are not covered here. Please refer to the BRE publications series **An introduction to low-impact building materials: Hemp lime (IP 14/11), Straw bale (IP 15/11) and Natural fibre insulation (IP 18/11)**<sup>[1]</sup>, for detailed information about individual renewable construction materials.

The use of renewable materials is outlined for individual building elements – external walls, insulation, internal finishes (paints and floor coverings) and roofing. Product information sheets have been included to summarise the physical properties, advantages and limitations of the materials used. The Information Paper concludes with a series of short case studies demonstrating the use of some of these renewable construction materials and the lessons learned during construction and operation.

## 1 Renewable materials: an overview

The energy needed to construct and inhabit buildings is responsible for about 47% of the total UK greenhouse gas emissions each year<sup>[2]</sup>. These include the emissions attributable to construction products, ie the extraction of raw materials, their manufacture and transportation.



Strawbale wall construction

In line with the Kyoto Protocol, the UK Government has set a legally binding target to cut emissions of greenhouse gas emissions by 80% below 1990 levels by 2050 (under the Climate Change Act 2008).

The installation of effective thermal insulation and other energy-efficient materials can significantly reduce the carbon dioxide (CO<sub>2</sub>) emissions attributable to the energy used in the operation of buildings. Renewable construction materials have the potential to go a step further by reducing CO<sub>2</sub> emissions associated with the materials used in construction.

Renewable construction materials are materials derived from agricultural crops grown for non-food uses, other plants and animal sources. These materials can provide a viable alternative to traditional fossil fuel-based material options and thereby reduce CO<sub>2</sub> emissions.

In 2006, the UK Government published a report *Creating value from renewable materials: A strategy for non-food crops and uses two year progress report*<sup>[3]</sup>, to promote the use of renewable materials for a range of industrial uses from pharmaceuticals, automobiles to renewable energy and construction materials.

This Information Paper is the outcome of a study about the application of renewable materials in building construction.