Abstract

This paper describes the process of materials selection, design and construction used for a series of small residential buildings in Southern France. Whenever possible, materials were resourced in situ in order to minimise the environmental impact of the new buildings. In particular, the process of materials selection, stone masonry with stabilised in situ soil mortar, and the form of construction are outlined. Guidance for a more generalised adoption of the design process is also provided. The energy consumed in the building of one house is compared to a typical concrete house. By adopting local materials the amount of energy used in building decreased by up to 215% and the impact of transportation by 453%. However, adoption of local materials in developed countries can be hindered by the loss of traditional building crafts and a lack of appropriate building standards. These problems are also discussed in this paper.

Introduction

Throughout the world the building industry is responsible for high levels of pollution as a result of the energy consumed during extraction, processing and transportation of raw materials. For example, the energy used to manufacture and transport building materials represents nearly 8% (350 PJ per year) of all primary energy used in the UK, whereas 50% of all energy consumed is attributable to occupation of the dwellings [1]. This paper considers the potential for reducing energy consumption during construction by using building techniques suited to locally resourced materials.