

PREFACE

Buildings have a significant impact on the environment since they consume a lot of energy and are responsible for a large portion of carbon emissions and use of resources. The building and construction activities worldwide consume 3 billion tons of raw materials each year or 40 percent of total global use. The buildings sector accounts for about 40% of primary energy consumption, 70% of electricity use, and 40% of atmospheric emissions in developed countries. Buildings are responsible for more than 40% carbon emission through embodied energy in construction materials and products, energy consumed during construction process and operational energy consumed by the buildings. In today's contemporary architecture, the key challenge is to choose materials and technologies that can reduce burden to the environment. The need of the day is to have energy efficient buildings materials that cater to the rising need hence alleviating pressure on resources. To reduce the energy consumption in buildings, a sound knowledge and understanding of operational and embodied energy of the building materials are essential. Hence, selecting construction and finishing materials that have low embodied energy and have less operational and maintenance cost is the most powerful tool for the architects, designers and the constructors to achieve high energy efficiency in buildings. This special volume on 'Materials and Technologies in Construction with reference to Energy Efficiency and Sustainable Development' contains eleven chapters which address a wide range of issues pertaining to building materials with reference to energy efficiency and sustainable development. The volume will be of special interest to environmentally conscious engineers, producers of building materials, building professionals and it shall also be useful to scientists and researchers.