

## Information Paper

# Critical materials and material security in the construction industry and its supply chains

## Andrew Dunster

Businesses involved in manufacturing construction products or in other construction activities have always needed to have reliable access to specific raw materials or components; increasingly they will also need to be prepared for, and be able to foresee, restrictions in the availability or supply of certain materials in an increasingly controlled global marketplace and develop strategies to mitigate the main impacts of potential disruptions in supply.

This Information Paper summarises the main current issues of material security and materials criticality that may affect the UK construction industry. It also defines the terminology used in this subject and lists sources of further information. The Information Paper will interest procurement professionals, sustainability managers and anyone with an interest in corporate social responsibility, design, materials selection and in the management of business risks associated with procurement of materials and products. It will also interest surveyors involved in evaluating existing buildings. Production of the paper was financially supported by the BRE Trust Responsive Research Programme.

## 1 What is material security?

The term 'material security' has no single agreed definition. However, the concept can be expressed simply as having restricted access to particular materials. The issue of material security has been brought into sharp focus in recent years with concerns among EU and UK policy makers about the availability of the rare earth metals (REMs) for use in technological applications and also the availability of 14 critical chemical elements as highlighted by the EU<sup>[1]</sup>. Examples of critical chemical elements increasingly used in items relating to construction include indium (used in photovoltaic (PV) cells), REMs for electronic control systems and tungsten (used in cutting tools).



Copper is a critical material for the construction industry

The resources used in the construction industry range from huge tonnages of primary materials to formulated products and specialist components. This Information Paper therefore draws selectively upon examples from heavy industries (cement and concrete) and specialist systems (renewable energy technologies) to illustrate the main issues and principles.

Although it is arguably less directly affected by these issues than other industries such as aerospace or electronics, the construction industry and its supply chains cannot ignore material security: issues range from ensuring reliable, ongoing access to the commodity materials (cement, aggregates, copper), but also include 'hidden' impacts on the manufactured components and assemblies used in construction which may unknowingly include some of these critical materials within long or complex supply chains. Most manufacturers already routinely assess and manage material security risks on an ongoing basis as part of their normal business operations but risk assessment practices do vary in their depth and rigour.

It is important to appreciate that economies are unlikely to run out of any raw materials due to actual depletion in the earth's crust<sup>[2]</sup>. However, a range of environmental and economic issues such as high (unacceptable) rates of consumption, unacceptable environmental and social impacts of extraction and influences