Strategic Materials for a Low-Carbon Future: From Scarcity to Availability
2-3 November 2017 – Session Summary

Breakout 3c: Eco-design in the built environment

Eco-design each year eliminates more than the annual energy consumption of Italy. Part of the circular economy principle is to think about how to design products so that they incorporate recycled materials and that they are easily reusable or recyclable. This implies thinking about resource efficiency in the product design process and a shift away from the mindset of planned obsolescence. How is this shift being incorporated into design or business education for buildings and the built environment? Can key components like steel girders be designed for re-use in buildings? In practice, which businesses or organisations are leading this charge and how? Can producer responsibility concepts be applied for buildings?

Vernon Collis, Adjunct Associate Professor, Department of Civil Engineering, University of Cape Town
Nitesh Magdani, Group Director of Sustainability, Royal BAM Group
Davide Stronati, Group Sustainability Leader, Mott MacDonald

Moderator: Larry Yu, Co-Founder & Managing Director, Kite Global Advisors

- Nitesh Magdani of Royal BAM Group outlined the issue: The built environment has a long lifespan - and the industry is currently doing very little thinking about circularity or materials efficiency. Buildings last 60 or 100 years, but no one knows whether their materials will end up reused or in landfill. How to incentivise the supply chain for reuse in the marketplace, and to find solutions to what happens in 50 or 100 years' time?
- Information management is necessary to enable a viable marketplace for materials reuse, but getting information management to work with clients and current business models is a key challenge. Some other methods to lower carbon and materials footprint are: material passports (certain industries, like steel, are looking to kitemark where the product comes from); substitutions (eg substituting steel frames with high-tech timber frames and moving away from energy-intensive materials); and design for disassembly and reassembly (eg exploring 3D printing for built-environment uses).
- Vernon Collis pointed out that engineers and architects each lack certain perspective: that engineers are not trained in the social and historical context of designing systems, while architects focus too much on the aesthetic value of materials, and both lack training on the cycle of materials.

- Finally, speakers discussed some examples of leadership in the industry. Anglian Water, in 2008, began to pursue carbon as a metric in designing and delivering assets, identifying and setting capital and operational carbon budgets on each asset - 50% reduction in capital carbon (embodied carbon) and 20% in operational carbon.

Speakers agreed that public tenders might drive change by including some of these methods as criteria.