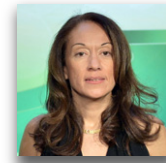


Editorial

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A circular economy is becoming the new leading paradigm in the quest for sustainable development, unifying waste management and resource efficiency. The transition towards a circular economy has the potential to boost competitiveness of individual businesses, and entire industry sectors and nations, can foster sustainable economic growth and generate new jobs. In the European Union (EU), the Circular Economy Package establishes an ambitious programme of action, covering the whole cycle from production and consumption to waste management and the market for secondary raw materials (EC, 2015). At the global level, the prominent work of the Ellen MacArthur Foundation is exploring the notion and the potential of circular economy; that is, an economy ‘that is restorative and regenerative by design’ and sets the framework for locally relevant change (Ellen MacArthur Foundation, 2016).

The construction sector is one that has many benefits to reap from its transition to the new Circular Economy Paradigm (both economic and environmental). According to a recent report by the World Economic Forum (2016), the construction industry is the largest single consumer of raw materials and resources globally. In the USA, about 40% of solid waste derives from construction and demolition, while similar percentages are reported in most countries where fairly reliable relevant statistics exist. In the EU, construction and demolition waste (CDM) accounts for 25–30% of all waste generated. However, less than a third of it is recycled or reused. This constitutes a significant loss of valuable material resources. CDM provide excellent, albeit underexploited, opportunities to create closed material loops.

Such opportunities are well explored in the paper of Rojas-Valencia and Aquino Bolaños (2016), in this issue of *Waste and Resource Management*. They examine the manufacture of sustainable adobe bricks with construction wastes. Adobe bricks are widely used in many parts of the world for traditional and low-cost buildings. They require large quantities of clay material and organic residues, such as straw and dung, which could have a more beneficial use as soil amendments. The authors have tested different mixtures, integrating clay excavation wastes from two different construction sites in Mexico and recycled aggregates from concrete, together with wood cutting wastes and a liquid mixture of water and prickly pear extract, as a natural additive. Results were very promising, as the combinations tested met the Mexican national quality

standards for non-structural adobe bricks. This also reminds us that circular economy approaches are not only suitable for high technology innovation, but can be applied everywhere, providing locally optimal solutions to promote affordable and sustainable housing where it is most needed.

Tam *et al.* (2016) examine the wider context of circular economy in the construction industry through the development of a sustainability checklist in construction. Their research addresses the requirement to close the gap between the widespread acceptance of the need for more sustainable approaches in the industry and the lack of knowledge and experience on how to develop and implement them day to day. In their paper, a comprehensive sustainability checklist that covers all of the aspects of construction projects is developed. Such a checklist constitutes a valuable operational tool for all of the types and sizes of construction organisations, also promoting the overall sustainability culture in the industry.

For the vast potential benefits of circular economy to be realised we need to possess, understand and apply the correct tools to guide our decisions in daily waste management practice worldwide. Life cycle thinking, in its most generic form, as well as robust life cycle assessment (LCA) of the different options available in each specific case can guide us to our quest for a circular economy.

The paper by Mali and Patil (2016) addresses the problem of municipal solid waste (MSW) management in the city of Kolhapur in India through a life cycle assessment of the different options. A piece of well-established LCA software, SimaPro, is used for this purpose and the various options are discussed in detail within the local context. For such exercises to be meaningful, a good knowledge of the waste composition is required. Such data is usually not available for the vast quantities of waste produced in the fast developing parts of the world where they are most needed to provide environmentally viable low-cost solutions. The authors also contribute to this knowledge gap, as they provide results of a comprehensive MSW analysis in the area.

Finally, Ristić *et al.* (2016) tackle the issue of environmentally sound management of a small, in terms of quantity, but highly significant, in terms of safety, waste stream – that of household

pharmaceutical waste. The geographical focus of their research is Serbia, but the multi-criteria optimisation-based model for pharmaceutical waste management they have developed, could find universal application.

The circular economy concept is key to harnessing the benefits from transforming our waste into resources. In a circular economy world, the built environment assets will represent the biggest valuable materials deposit for society. To be able to fully tap into it, we need to implement sustainable construction from the very first steps of the design phase. Nevertheless, some other waste streams, such as pharmaceutical waste, will still need to be safely disposed of, after ensuring that all potential for their prevention has been exploited. The papers that the readers of this issue of *Waste and Resource Management* will enjoy offer a spherical coverage all these diverse aspects of the quest for circular economy.

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