

Capabilities for circularity: Overcoming challenges to turn waste into a resource

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Although designing out waste is a core principle of the circular economy, companies who engage in these practices can both lower their impact on the environment and create new revenue streams by turning waste into a resource with the right skills and capabilities.

Researchers from The University of Queensland (UQ) Business School examined the range of capabilities needed to overcome the challenges in successfully converting waste into a resource. Specifically, they conducted a longitudinal case study on how Rock Trade Industries, a sandstone quarry based in Southeast Queensland, transformed 100% of their waste into a valuable alternative to sand extracted from natural aquatic ecosystems.

Capabilities in innovation and experimentation

Converting waste into a resource requires questioning established industrial practices, products, and processes. Therefore, inwardly focused capabilities related to innovation and experimentation are essential if companies are to reimagine how waste can be transformed into a product. These capabilities should be supported by a company culture that embraces learning from failure if new products made from waste are to be discovered.

“Many of the products were developed as a result of an unexpected discovery made during an R&D process, rather than a planned and intentional target of a process itself.”



Scotbar Quarry – Photo by Dr Belinda Wade

Capabilities in communication and collaboration

Gaining acceptance for new products is difficult, particularly when they challenge expected norms of providence, as is the case with products linked to the reconceptualization of waste. A productive relationship with a range of stakeholders is required to promote sectorial acceptance and adoption of novel products from waste resources. Externally focused communication and collaboration capabilities are needed to work with regulators to establish or amend standards. Similarly, collaboration capabilities are necessary to work with customers to ensure the product meets their requirements and to overcome any cognitive barriers to acceptance.

“Networks with universities, customers, regulators and government departments have been integral to the product’s eventual success; however, earlier roadblocks in some of these relationships were major obstacles. Establishing ecosystem connections regarding their products held the key to market success of their new business model.”

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