

3.3.2 Economic Value Retained Through Material Banking

Reducing waste in the construction process - both by sourcing re-used materials at point of construction, and by returning functional materials to the market at end of life point, offers financial opportunity versus standard building construction practice.

Business as usual in many geographies today is that excess building materials - both surplus in the construction process to those available at end of life stage - end up as waste¹⁴⁸. The US Environmental Protection Agency found that total waste from construction-related projects was double that of municipal waste from households and businesses¹⁴⁹. As much as 32% of landfill waste comes from the construction site, with 13% of materials delivered to a construction site being sent directly to landfills without having been used¹⁵⁰. However, sustainable building efforts can help the construction industry substantially reduce waste generation¹⁵¹.

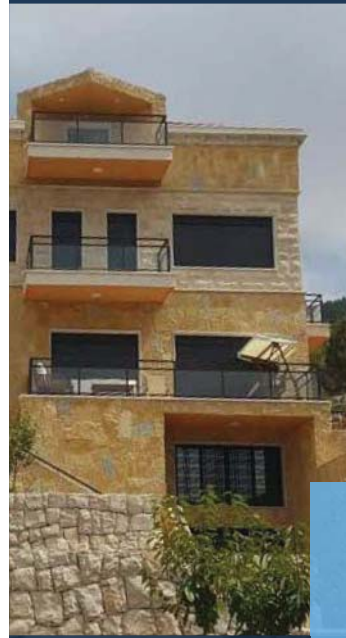
With the transition to a circular economy, buildings, infrastructure and the materials that create them are considered reusable assets, with lasting value. Flexibly designed buildings become banks of valued materials, able to be extracted without damaging or degrading the material and facilitating reuse in another project - thereby slowing resource use to a pace that is sustainable for the planet. Materials banking represents a source of additional financial value as a resource to be realised once the building reaches the end of its use. For example, re-using asphalt and concrete has been shown to save up to 25% on material costs¹⁵².

For the asset owner, realising maximum value depends on choosing the right materials and construction techniques that are low cost to dismantle, reuse and recycle. This approach can also be applied in a similar way to existing assets. For example, if the building is examined in advance with the goal of capturing value at the end of its use, the owner

will be aware of the materials that have potential value and how they should be dismantled to preserve it. With this approach, financial value is embedded within the fabric of the building, to be accessed at point of deconstruction.

CASE STUDY

Mansour Residences, Aytou Village, Lebanon



Economic value retained through material banking

- Mansour residences are three residential houses that have been built in Aytou Village, Lebanon.
- Built at an altitude of 1,100m using 'Design for Life' principles, the development included a range of sustainability strategies to optimise material efficiency, such as structural waste reduction and reuse of excess materials, extended material life span due to use of durable concrete and local stone facade cladding, plus energy efficiency measures leading to reduction in CO₂ emissions

Through these interventions, the project demonstrates optimal financial value at the residential scale: the residences were 8% cheaper than similar projects due to waste reduction and reuse of excess materials, and present a 12% cost reduction due to energy and material optimization and circular design principles

- The project also contributes to local resilience measures with features such as a water harvesting system, that can store up to 460m³, plus over 100 trees that both contribute to biodiversity and to feeding residents. This case study demonstrates that sustainability principles can be implemented in all climates, geographies and typologies - and the business case benefits experienced at both large and small scales.

THIS PROJECT WAS **8% CHEAPER** THAN SIMILAR PROJECTS