

Organisation	CapitalLand
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A. Problem Statement/Title:

To cost effectively recycle food waste within a small bin centre in existing shopping malls, while supporting the concept of circularity

B. Background of the Problem:

About a third of the general waste disposed in existing shopping malls is food waste, amounting to about a tonne of food waste disposed per day per mall. This is largely an untapped resource that CapitalLand seeks to harness for circularity.

While there are existing on-site solutions that can recycle food waste, mall operators face challenges in integrating such solutions into their existing waste management practices.

Food waste needs to be relatively free from non-organic waste (e.g. plastic containers, metal spoons) before it can be recycled into high quality compost/liquid nutrients using on-site food waste digesters. Additionally, while end products like compost and liquid nutrients support the concept of circularity, they have limited applications within a shopping mall.

The bin centres in existing shopping malls, which already house compactors, also do not have space to accommodate food waste digesters. A compactor typically occupies more than 80% of the bin centre space, while existing food waste digesters available on the market are about the size of one compactor. It is costly to redesign the existing bin centres to accommodate a food waste digester. Downsizing the compactor may lead to insufficient capacity to handle waste generated. Placing a food waste digester at a location other than the bin centre makes it inconvenient for waste disposal and may create additional pest and odour management issues.

Furthermore, waste generation varies over time. As building occupants and users adopt better eco-habits of reducing food waste, there could be a situation where the original food waste digester becomes oversized after a few years.

CapitalLand seeks a solution that can help us recycle food waste within the small bin centre in existing shopping malls, while supporting the concept of circularity.

C. Technical Requirements / Performance Criteria:

The proposed solution shall address the following:-

- New opportunities for circularity: generate preferably new high-value output to be used in our shopping malls, offices, industrial and lodging properties

- Issues with high contamination: either cope with more than 10% of non-food waste in segregated food waste or reduce the contamination in segregated waste
- Small installation footprint: be suitable for installation within limited space in bin centre
- Resource reduction: achieve measurable reduction in carbon emissions and waste volume
- Modular: cope with changes in food waste volume over time
- Holistic solution for waste management: do not compromise the reliability of existing waste collection and disposal (i.e. should not increase risk of overflowing waste, smell and pest issues)
- Cost efficient: has strong financial benefits relative to its cost

D. Cost target of the product/solution:

Cost recovery must make sense, preferably less than 3 years

E. Timeframe for development of the product/solution:

Within 12 - 15 months, from award

F. Potential market / business opportunity for the product/solution:

There is possibility of scaling up to other CapitaLand properties upon successful trial. The solution is also applicable for other existing properties with limited bin centre space.

G. Resources to be provided:

NEA and CapitaLand will provide mentorship and test-bedding site for the pilot deployment.

H. Other considerations:

N.A.