

CALL TO REDUCE FOOD WASTE DISPOSAL FROM COMMERCIAL PREMISES AND ENHANCE RECYCLING

1. INTRODUCTION

1.1 The National Environment Agency (NEA) and Enterprise Singapore (ESG) have jointly launched the Call to reduce food waste disposal from commercial premises and enhance recycling, as part of the National Innovation Challenges (NIC) to:

- Improve source segregation of food waste by stakeholders (*tenants, cleaning staff and/or patrons*)
- Accurately track and measure the amount of segregated food waste (*between organic and inorganic*) generated by tenants within premises
- Have a robust on-site food waste treatment system that optimises use of limited space and generates useful output for commercial premises

1.2 This Innovation Challenge is launched together with three challenge owners (i.e. CapitaLand Limited, Changi Airport Group and Lendlease).

1.3 This Call provides selected solvers with the opportunity to develop solutions to address validated market needs identified through working with the challenge owners, with first deployment lined up following successful prototyping. Building on their first demonstration, solvers can potentially scale through industry-wide adoption and internationalise.

2. CHALLENGE STATEMENT

Project Title	Description of the challenge statement
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To reduce food waste disposal from commercial premises and enhance recycling	<ul style="list-style-type: none"> • Food waste is one of the largest waste streams in Singapore, with a high generation rate and a low recycling rate. • Under the Resource Sustainability Act (RSA), large food waste generators will be required to segregate their food waste for treatment and implement on-site food waste treatment in stages from 2024/2025. • Commercial premises face challenges for effective food waste segregation as it is time-, space- and manpower-consuming: <ul style="list-style-type: none"> ○ With continual pressure to be productive, there may be difficulties in adhering to this new regulation at the industry level. At the premise level, stakeholders including tenants, cleaning staff and patrons do not have the habit or adequate knowledge of segregating food waste, which may result in low participation rates in recycling and/or high contamination of food waste. High contamination rates can lead to food waste treatment systems breaking down more frequently thus requiring more manpower to fix the system. Common food waste contaminants include metal utensils or tins, hardy food waste (e.g. durian husk, seafood shells, bigger bones), greasy food waste, non-food waste (e.g. tissue paper, disposable utensils, containers and wrappers), etc.
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- While food waste tracking solutions are available, the adoption rate is extremely low in the market today due to a high operating cost structure. This lack of food waste data by the premises makes it difficult for premises owners/landlords to track tenants' food waste segregation efforts, resulting in non-targeted and less effective outreach efforts in encouraging food waste segregation among tenants.
- Commercial premises have limited space to install food waste recycling machines.
- Commercial premises also face several challenges in implementing on-site food waste treatment systems, as:
 - Existing on-site food waste treatment systems are sensitive to contamination, thus requiring regular maintenance and repair.
 - Premises have limited space available to house such bulky equipment
 - The output from existing on-site treatment solutions (e.g. compost or non-potable water) may not be useful to premises and require the sourcing of off-takers in order to close the waste loop.
 - On-site treatment systems may be located near work and living environments, therefore disamenities such as odour, noise and air pollution would need to be minimised

The overall challenge statement and the respective challenge statements for the three project owners can be found in the hyperlinks below:

	Overall	CapitaLand Limited	Changi Airport Group	Airport	Lendlease
Challenge statements					

3. FUNDING SUPPORT

3.1 Up to \$2 million is allocated to this Innovation Challenge. Of the \$2 million, up to \$1 million is allocated to support one or more selected enterprise(s) in solution development projects from Proof-Of-Concept (POC) / prototyping to pilot deployment. The remainder of up to \$1 million is allocated to support adoption of solutions. Potential adopters are entitled to up to 50% co-funding support.

FUNDING SUPPORT FOR DEVELOPMENT PROJECTS (up to \$1 million)

3.2 Project lead(s) and members of the problem solver teams must be identified and clearly indicated for each proposal. Public researcher(s) from Institutes of Higher Learning (IHLs) and Research Institutes (RIs) may collaborate with enterprise(s) on these projects. Project teams should be enterprise-led.

- 3.3 Singapore-based enterprises can qualify for up to 70% funding support if development activities are performed in Singapore. This includes local SMEs/start-up¹, and foreign SMEs/startups² based in Singapore.
- 3.4 Separate funding will be provided by National Research Foundation (NRF) Singapore to public researchers to collaborate with Singapore-based enterprises for POC/prototyping and pilot deployment. Public researchers can be supported up to 100% by NRF. For details, please refer to Innovation and Enterprise Office (IEO) office.
- 3.5 Solutions should also not be readily or commercially available in the market.
- 3.6 Qualifying cost components for enterprises include:

Components	Description
Manpower costs	This only applies to employees directly involved in the project. This does not include employees employed for other job functions and/or job scopes outside of the proposal.
Equipment/ Software	Core equipment/tools required for developing front-end/back-end application (<i>e.g. software/mobile application</i>) and/or prototyping. This includes purchase price, and costs related to R&D and test-bed phases (<i>e.g. delivery, installation, handling, etc.</i>). Only project-related technical software and equipment that is non-existing within the organisation may be supported. Operational costs such as cost of capital works, general infrastructure, general purpose IT communication equipment, office software and equipment, and furniture and fittings, etc. will not be supported. <i>Note: Equipment purchased prior the notification date of award cannot be claimed.</i>
Testing and Certification	Third-party testing and certification services to ensure that proposed solutions comply with required standards and regulations.
Consultancy (Professors/ Experts)	Consultancy or advisory cost for professors/experts may be supported if relevant, to meeting the milestones and deliverables of the project.
Intellectual Property (IP)	Licensing/Technology/Acquisition/Patent-related costs in direct relation to the technology must be stated in proposal. Supporting documents such as a copy of the original source must be provided.

3.7 Development and test-bedding of the solutions

¹ For local SMEs/start-ups, the companies must fulfil the following criteria:

- a) Registered and operating in Singapore, and
- b) Have minimum 30% local shareholding, and
- c) Have group annual sales turnover of not more than S\$100 million, or group employment of not more than 200 employees

² For foreign SMEs/start-ups based in Singapore, the company must be registered in Singapore

The development and test-bedding of the solutions could be carried out in the following phases, up to a period of 15 months, from notification of award.

- a) Development Phase: Involves the development of the solution and prototyping. Proposal shall proceed to the Test-bedding Phase only upon successful completion of prototyping.
- b) Test-bedding Phase: Involves test-bedding and user acceptance test of the proposed solution at relevant premises/sites in Singapore.
- c) Pilot Deployment Phase: Involves deployment of solution in “live” operation at designated premises/sites, ensuring that the expected outcomes are always met, fulfilling the scope of works and meeting the deliverables specified in the Project Agreement.

3.8 The total funds requested shall not exceed the approved quantum.

3.9 There should be no request for additional funds unless there are strong and valid justifications. Any additional funding will be subject to NEA’s and ESG’s approval. Companies are advised to provide thorough and accurate breakdown costs of their proposal during the submission.

4. EVALUATION CRITERIA

4.1 Proposals will be evaluated based on the four parameters indicated in the table below, with the corresponding information to be included in the proposal:

Parameters	Objective / Details	Required Information
1. Technical feasibility of solution (35%)		
Effectiveness in addressing the challenge	Whether and how the proposed solution can address the requirements stated in the challenge statements	<ol style="list-style-type: none"> 1. Shows how each of the requirements can be met, with relevant examples 2. Scalability of the solution
Operational Feasibility	To demonstrate the user friendliness of the system and strategies to ease the users in transiting to the proposed solution	<ol style="list-style-type: none"> 1. Stakeholder onboarding plan 2. Clear identification of potential users of this solution 3. Training plans across different user groups 4. Demonstrate ease of use 5. Shows how there is minimal/no nuisance and disruptions to existing operations 6. Shows how there is minimal/no alterations to existing infrastructure
2. Business feasibility of solution (30%)		
Commercialisation strategy	To demonstrate clear business strategies in the scale up use of this solution	Comprehensiveness on the business plan to scale up the developed solution (<i>e.g. target audience, potential prospects, sales & marketing channels, etc</i>)
Estimated Commercial cost and return of	To demonstrate ROI of the solution	Proposed business model with the following information:

investment (ROI) upon implementation		<ol style="list-style-type: none"> 1. Estimated Commercial Price: CAPEX or Subscription-based (<i>to indicate minimum committed time period</i>) 2. Estimated Operational and Maintenance cost 3. ROI calculations and assumptions made
3. Capacity and Expertise to execute projects (20%)		
Expertise to executive projects	Credibility of project consortium	<ol style="list-style-type: none"> 1. Relevant project references 2. Credentials (CV) of project team members especially project manager/technical leads
Capacity to execute projects	Demonstration of capacity to undertake this project	<ol style="list-style-type: none"> 1. Current and upcoming projects (<i>6 months</i>) that consortium is/will be involved in 2. Current and upcoming projects (<i>6 months</i>) projects that the project team manager/technical leads are/will be involved in
4. Clarity & Comprehensiveness of proposal and test plans (15%)		
Overall clarity and comprehensiveness of proposal	Demonstrate clarity and comprehensiveness in the proposal	<ol style="list-style-type: none"> 1. Project management plan (<i>timeline, personnel involved at each phase, etc</i>) 2. Risk identification and mitigation (<i>Covering design risk, operational risk</i>)
Detailed plans for development, Test-bedding and Pilot deployment	Detailed plans for development, Test-bedding & Pilot deployment tests stating the purpose, objectives, scope, deliverables and outcomes	<ol style="list-style-type: none"> 1. Development plan 2. Test-bedding plan 3. Pilot Deployment plan

5. RIGHTS OF AWARDING


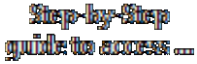
NEA and ESG reserve the right to select proposals to be awarded. For the avoidance of doubt, NEA and ESG also reserves the right not to award funding to any proposal.

6. DATES OF THE CALL AND TECHNICAL BRIEFING

6.1 The Call will be opened between 7 Dec 2020 and 19 February 2021 (*both dates inclusive*). The deadline for submission is on **19 February 2021 at 12pm** (*Singapore time, GMT+8*).

6.2 A virtual technical briefing will be held to provide potential solvers with more information. The details for the briefing are as follows:

Date	:	8 December 2020 (Tuesday)
Time	:	11.15am – 11.40am
Format	:	Online streaming via TechInnovation Portal

Registration	<p>: Register using this link (https://www.techinnovation.com.sg/registration) by 7 Dec (Mon), 12pm</p> <ul style="list-style-type: none"> • Fill in the necessary details and submit (<i>You will receive an auto-generated email reply on the confirmation of your registration, with the access link provided</i>) • After you have registered for the event, do email us at Food_Waste_Call@nea.gov.sg <p>Note: <i>If you have registered for the event, but did not receive the auto-generated email reply, do email us at Food_Waste_Call@nea.gov.sg, oi@ipi-singapore.org and sustainability_challenge@enterprisesg.gov.sg</i></p>
Access to the Technical Briefing (8 Dec 11.15 – 11.40am)	<p>: On the actual day of the technical briefing (<i>8 Dec</i>), to click on the access link provided in the auto-generated email reply.</p> <ul style="list-style-type: none"> • Please refer to the attached guide for more information to access the technical briefing for this Food Waste Call. <div data-bbox="518 936 715 1070" style="text-align: center;">   </div> <p>Note: <i>Remember to log in earlier so that you do not miss this briefing for the Food Waste Call.</i></p>

7. SUBMISSION PROCEDURE

7.1 Submit your proposal via the [SOIC portal](#) using the '**SOIC 2020 Application Form**' and '**Application Form to request for Grant Support**', which can be found in the attachment section of the portal, together with all supporting documents.

- Step 1: Create an **account** in the [SOIC portal \[Industry Track\]](#) (*if yet to do so*), and you will receive an email reply for the confirmation of the account creation;
- Step 2: **Log in** to the [SOIC portal](#);
- Step 3: Click '**Submit Proposal**'.

Note: *Please refer to the [SOIC 2020 Proposal Submission Instruction](#) for more information*

7.2 The deadline for submission is **19 February 2021 at 12pm** (*Singapore time, GMT+8*).

8. CONTACT DETAILS

For further enquiries on this Call, please email:

- Food_Waste_Call@nea.gov.sg – National Environmental Agency for matters pertaining to the challenge statements
- oi@ipi-singapore.org or sustainability_challenge@enterprisesg.gov.sg – for assistance on:
 - *Using the SOIC portal for registration, submission of proposal, etc.*
 - *Matching technology partners to collaborate for this call*
 - *Funding enquiry*