



MEDIA RELEASE

EMBARGOED TILL 6 JUNE 2019, 0905 HRS

CLEANENVIRO SUMMIT SINGAPORE CATALYST 2019: CIRCULAR ECONOMY PROVIDES OPPORTUNITIES FOR BUSINESSES TO BE RESOURCE EFFICIENT AND SUSTAINABLE

Key updates on the transformation efforts of the environmental services industry announced at CESS Catalyst 2019

Singapore, 6 June 2019 – Minister for the Environment and Water Resources, Mr Masagos Zulkifli, opened the CleanEnviro Summit Singapore (CESS) Catalyst 2019 to more than 160 participants including leaders, technology innovators and service providers of the environmental services (ES) industry. The two-day by-invitation event was themed “Circular Economy: Towards A Resource Efficient and Sustainable Business” in recognition of Singapore’s Year Towards Zero Waste and the opportunities for the business sectors to embrace circular economy. Notable guest speakers such as Mr Daniel Calleja Director General for Environment of the European Union Commission, and Mr Hareld van den Brink, Co-Director Asia of Metabolic were also present at the event. For a full list of the speakers, please visit www.cleanenvirosummit.sg/programme/cess-catalyst-2019/cess-2019-catalyst-speakers.

Productivity Solutions Grant (PSG) for Environmental Services

2 More ES solutions have been supported by the PSG since it was available in September last year. Thus far, 32 applications have been approved and \$1 million of the grant has been committed, signaling a demand by companies in the ES industry to adopt ready-to-go solutions to increase operational efficiency and productivity. The list of supportable solutions has also been expanded. The newly added solutions and a list of companies which have tapped on PSG are appended in **Annex A**.

Updates on Regulatory Sandbox and Innovation, Research and Development Projects

3 There have also been key updates on the transformation efforts of the ES industry as follows.

4 NEA has approved two regulatory sandbox projects for trials. This is under the regulatory sandbox announced at CleanEnviro Summit Singapore 2018, to create an environment with relaxed regulations within parameters for companies to experiment with innovative solutions. The first project is Alpha Biofuels’ proposal to use of a digital platform, along with and leveraging its

logistic partners' vehicles for reverse logistics during their usual delivery runs to collect used cooking oil from food and beverage (F&B) operators. The second project is Singapore Power Group (SP Group) proposed use of an onsite gasification system to treat waste generated at the Gardens by the Bay. The system will harvest energy from the process to produce heated water to be utilised by the F&B tenants at the Gardens and solid carbon material for possible horticultural R&D purposes. More information on the two projects can be found in **Annex B**.

5 Two grant calls have also been successfully concluded to date under NEA's "Closing the Waste Loop" Research and Development (R&D) Initiative, announced along with the Environmental Services Industry Transformation Map (ES ITM) in December 2017. This \$45 million R&D funding initiative aims to help universities, research institutes and companies develop solutions to extract resources from key waste streams (e.g. plastic and electronic waste) and residues (e.g. incineration bottom ash). Under the first grant call, two projects have been awarded to the Institute of Chemical and Engineering Sciences and Temasek Polytechnic respectively, on treating and extracting resources from plastic waste. Under the second grant call, another two projects have been awarded to the Nanyang Technological University and Republic Polytechnic respectively, on reusing incineration bottom ash. These R&D projects contribute towards the Sustainable Singapore Blueprint's vision of a Zero Waste nation. More information on these four awarded projects can be found in **Annex C**.

6 As Singapore moves Towards Zero Waste, opportunities for businesses to embrace a circular economy would become more prevalent. In adopting a circular economy model, businesses need to change the way they work, grow capabilities, drive innovation and adopt greater use of technology to raise productivity. In doing so, they can also close the waste loop to enable their businesses to become more sustainable over the long-term. NEA will continue to work closely with key stakeholders in the industry to bring about change on various fronts, including catalysing the use of technology and innovation, enhancing jobs and skills, and increasing opportunities for internationalisation.

- End -

For media queries, please contact:

Hazel Wee (Ms)

Corporate Communications
National Environment Agency
Tel: 6731 9737 / 9877 3074
Email: hazel_wee@nea.gov.sg

Tan Shou Qun (Mr)

Corporate Communications
National Environment Agency
Tel: 6731 9355 / 9168 5014
Email: tan_shou_qun@nea.gov.sg

CleanEnviro Summit Singapore

The biennial CleanEnviro Summit Singapore (CESS) is a global networking platform for thought leaders, senior government officials and policy makers, regulators and industry captains. Held from 5 to 9 July 2020, the fifth edition of CESS is built on the theme 'Shaping Environmental Sustainability in Growing Cities', which will deep-dive into five streams: Waste Management, Cleaning, Sustainable Energy, Pest Management and Pollution Control. In-depth discussions and the sharing of global best practices will be facilitated through business forums and high level plenaries, such as the Clean Environment Leaders Summit, Clean Environment Convention, and

Clean Environment Regulators Roundtable. These sessions aim to facilitate the identifying, developing and sharing of practical, replicable and scalable solutions to address the environmental challenges of tomorrow's cities. The City Solutions Singapore Expo and Innovation Pitch will showcase the latest innovations in environmental technology and solutions. As a lead-up to CleanEnviro Summit Singapore 2020, the CESS Catalyst 2019 event will be held on 6 and 7 June 2019, as a *by invitation only* preview of the exciting forums that will be held at the main event.

For more information, visit www.cleanenvirosummit.sg.

About National Environment Agency

Formed on 1 July 2002, the National Environment Agency (NEA) is the leading public organisation responsible for ensuring a clean and green environment, and the sustainable development of Singapore. Its key roles are to protect Singapore's resources from pollution, maintain a high level of public health and provide timely meteorological information. NEA also develops and spearheads environmental initiatives and programmes through its partnership with the People, Public and Private sectors. It is committed to motivating every individual to care for the environment as a way of life, in order to sustain a quality living environment for present and future generations.

Productivity Solutions Grant (PSG) for Environmental Services

A \$30 million Productivity Solutions Grant (PSG) for the Environmental Services (ES) industry was launched in September 2018 to help drive widespread adoption of technology across the environmental services industry, and encourage small and medium-sized enterprises, multinational corporations, as well as premises owners (i.e. building / facility owners) to adopt commercially available and proven environmental services technologies, including equipment and digital solutions (i.e. ready-to-go solutions), to increase operational efficiency and productivity. As part of the Lean Enterprise Development Scheme (LEDS), the PSG also aims to help progressive companies transform and grow in a new manpower-lean landscape.

2 Since then, NEA has reviewed and expanded the list of supportable equipment and digital solutions to ensure that the ES industry continues to adopt ES solutions to enhance their productivity and provide better services. Companies can access the list at NEA's website: www.nea.gov.sg/industry-transformation-map/es-psg.

Successful Grant Applications



3 To date, we have approved 32 applications and about S\$1 million of the PSG has been committed. Some examples of successful applications are as follows:

Company Name / Premises	Equipment/Solution
Bosch Rexroth Pte Ltd	Autonomous floor cleaner/scrubber
Changi Airport Group (Singapore) Pte Ltd	Smart litter bin with compactor function
Colex Environmental Pte Ltd	Smart static compactor in bin centre
Lian Cheng Contracting Pte Ltd	Battery Operated Cart
Campaign Complete Solutions Pte Ltd	Autonomous floor cleaner/scrubber
UOL Property Investments Pte Ltd	Autonomous floor cleaner/scrubber
The Central Singapore (MCST 3515)	Autonomous floor cleaner/scrubber
Evershine Services Pte Ltd	Mobile Workforce Management @ PayAdvisorMobile® Version 3 - Package (PAM SME)

Reviewed List of Supportable Equipment and Digital Solutions

4 Some examples of the new / additional supportable equipment are as follows:

Sample pictures of new/additional supportable equipment	
Ride-on carpet extractor	

<p>Battery pack vacuum cleaner</p>	 <p>The image shows a person in a red shirt using a battery pack vacuum cleaner on a staircase. To the right is a product shot of the vacuum cleaner, which is a grey and black unit with a long, flexible hose and a motorized head.</p>
<p>Ride-on Industrial Sweeper</p>	 <p>The image displays two types of ride-on industrial sweepers. On the left is a smaller, white and teal unit with a steering wheel. On the right is a larger, teal and grey unit with a more complex operator's seat and controls.</p>
<p>Plastics washing system</p>	 <p>The image shows a large industrial plastics washing system. It consists of a white metal frame with a large yellow cylindrical component, likely a motor or part of the washing mechanism, and a white cylindrical tank. The system is mounted on a metal base.</p>

Regulatory Sandbox Projects

The regulatory sandbox for the ES industry was launched at CESS 2018, which provides a 'safe space' for interested parties to trial innovative ES-related technologies/solutions with a temporary relaxation of specific existing requirements. Since then, NEA has approved two applications, mainly on solutions to help achieve our Zero Waste vision and to alleviate our manpower challenges in this industry.

2 After a successful trial, the sandbox entity can proceed to deploy the technology/solution under experimentation on a broader scale, provided that:

- (a) both NEA and the sandbox entity are satisfied that the sandbox has achieved its intended test outcomes;
- (b) the regulatory treatment for the technology/solution for broader deployment is determined; and
- (c) the sandbox entity can fully comply with the relevant legal and regulatory requirements.

Alpha Biofuels

3 Alpha Biofuels developed a digital platform for reverse logistics to match F&B companies which need their used cooking oil (UCO) to be collected with logistic partners in the vicinity. Currently, UCO is collected by regular scheduled pick-ups or ad-hoc requests. By collecting UCO with the help of logistic partners and shared resources, Alpha Biofuels aims to improve the productivity of UCO collection, encourage good UCO recycling practices, reduce vehicular emissions and enable efficient tracing of the UCO. The duration of the trial is 3 months, from June 2019 to September 2019.

Singapore Power Group (SP Group)

4 Singapore Power Group (SP Group) is partnering Gardens by the Bay (GBB) and Mursun Pte. Ltd. to pilot a Micro Auto Gasification System (MAGS) for onsite waste to energy treatment using gasification technology at GBB. The system thermally breaks down waste from the GBB operations and transforms it into solid carbon material and syngas. The thermal energy from the syngas will be harvested through a heat exchanger to generate heated water to be used by the F&B outlets in GBB. The relevant solid carbon material produced can be used for possible horticultural R&D purposes in GBB. The trial will take place May 2019 to May 2021.

Innovation, Research and Development Projects

As part of our transformation efforts, NEA works closely with the industry and research community to identify key challenges and capability development opportunities in the environmental services industry. Through our engagement with the industry and research community, problem statements are identified and innovation calls are launched to crowdsource for suitable technologies and solutions for development and test-bedding.

Closing The Waste Loop Projects Awarded

2 Two projects under the grant call on managing plastic waste have been awarded to the Institute of Chemical and Engineering Sciences and Temasek Polytechnic; and two projects under the grant call on reusing incineration ash have been awarded to the Nanyang Technological University and Republic Polytechnic. Their research will support Singapore's efforts in working towards the Sustainable Singapore Blueprint's vision of a Zero Waste nation.

3 The duration of each project is about three years. More information on the projects can be found in the table below.

Project name	Host Institution	Proposed Outcomes
Request for Proposal for Sustainable Design of and Value Recovery from Plastics		
Recycling of Polyethylene (PE) and Polyethylene Terephthalate (PET) Containing Multilayer Packaging Materials	Institute of Chemical and Engineering Sciences	The proposed solution could revolutionise the recovery of both polyethylene (PE) and polyethylene terephthalate (PET) from multi layered films (MLF), and would be an initial step to address the challenges faced to recycle the plastic constituents in MLF.
An Integrated System to Produce Recycled Mixed Plastic Ingredients and Composites for Infrastructural Applications	Temasek Polytechnic Collaborator: Yun Onn Company Pte Ltd	The proposed developed processes will be able to use mixed plastics that were source separated from municipal solid waste (MSW) to produce secondary raw materials suited for use as construction materials.
Request for Proposal for Landfill Conservation: Utilisation of Incineration Ash		
Catalytic active catalyst support using incineration ash	Nanyang Technological University Collaborator: Johnson Matthey, University of Warwick	The developed technology capitalises on the metals inherently present in IA to produce a higher value product, i.e. catalytic active material which can be used in the catalytic converters of automobiles. It also presents an opportunity to produce a product with export potential and reduce the amount of IA disposed in SL.
A Scalable and Sustainable Process for Transforming	Republic Polytechnic Collaborator:	The proposal aims to simultaneously convert IBA to suitable construction aggregates and meet stringent

<p>Incineration Bottom Ash into Green Aggregates to Significantly Reduce Semakau Landfill Waste Handling</p>	<p>EnGro Corporation Limited</p>	<p>environmental guidelines for IBA utilisation. This is in line with NEA's objective to extend the lifespan of Semakau Landfill (SL) by minimising the amount of waste such as IBA disposed of at SL.</p>
--	----------------------------------	--