



Transforming Tomorrow's Cities
with Clean Environment Solutions

2018 Post Event Report



About CleanEnviro Summit Singapore

Organised by Singapore's National Environment Agency (NEA), the biennial CleanEnviro Summit Singapore (CESG) is a global platform for industry and government leaders to identify, develop and share practical, replicable and scalable solutions to address environmental challenges in the context of the waste-water-energy nexus in tomorrow's cities.

The fourth edition of CESG was held from 8 to 12 July 2018 at the Sands Expo and Convention Centre in Marina Bay Sands, in conjunction with the World Cities Summit (WCS) and the Singapore International Water Week (SIWW). Themed '**Transforming Tomorrow's Cities with Clean Environment Solutions**', CESG 2018 focused on five streams:



Waste Management



Cleaning



Pest Management



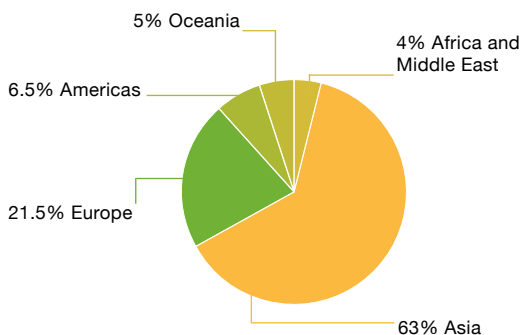
Sustainable Energy



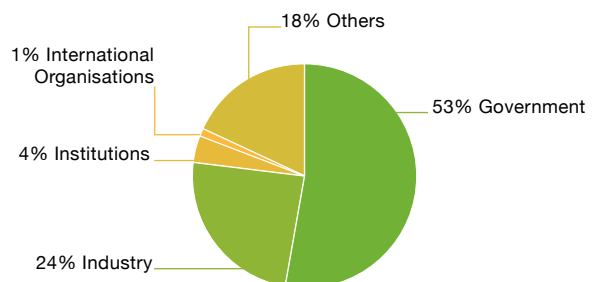
Pollution Control

In-depth discussions and the sharing of global best practices were facilitated through business forums and high level plenaries, such as the Clean Environment Leaders Summit, Leaders-Experts Forum, Clean Environment Convention, and Clean Environment Regulators Roundtable. The City Solutions Singapore Expo and Innovation Pitch showcased the latest innovations in environmental technology and solutions.

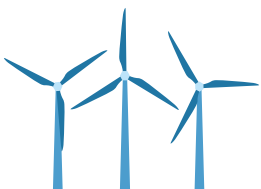
CESG attendee regions (excluding Singapore)



Attendee sectors







Over S\$5.5 billion worth of business deals were announced for the environmental sector.



Facts at a Glance

Sustained Pattern of Growth for CESG, SIWW & WCS

		2012	2014	2016	2018
ATTENDEES		>19,000	>20,000	>21,000	>24,000
COUNTRIES AND REGIONS		106	133	125	120
EXHIBITING COMPANIES		>700	>900	>1,000	>1,100
VALUE OF BUSINESS ANNOUNCEMENTS		S\$14.07B	S\$14.50B	S\$18.70B	S\$26.00B

Global Media Outreach

The significance of CESG 2018, including the relevance of the themes explored and global recognition of participants involved, drew the attention of local and international media:

- **Over S\$6.3M Advertising Value Equivalent (AVE) in media coverage**
- **282 media representatives (92 international | 140 local | 50 trade)**
- **123 media outlets (62 international | 25 local | 31 trade | 5 bloggers)**



The next CESG will be held from 20 to 24 June 2021.



Platform for Dialogue with Global Thought Leaders

Delegates and speakers of CESG 2018 came together in dialogue to address environmental challenges and co-create solutions along the streams of Waste Management, Cleaning, Pest Management, Sustainable Energy, and Pollution Control. The international panel of speakers comprised renowned experts, ministers, mayors, business leaders and heads of international organisations, such as:



**The Honourable
Ranil Wickremesinghe**

Prime Minister,
Sri Lanka



Mr Tharman Shanmugaratnam

Deputy Prime Minister and
Coordinating Minister for Economic
and Social Policies, Singapore



Dr Amy Khor

Senior Minister of State, Ministry of
Health and Ministry of the Environment
and Water Resources, Singapore



**The Honourable
James Shaw**

Minister for Climate Change,
New Zealand



**His Excellency
Dr Thani Al Zeyoudi**

Minister for Climate Change and
Environment, United Arab Emirates



Mr Yasuo Takahashi

Vice-Minister for
Global Environmental Affairs,
Ministry of the Environment, Japan



Her Excellency Patricia Espinosa

Executive Secretary,
United Nations Framework
Convention on Climate Change



Dr Kristalina Georgieva

Chief Executive Officer,
World Bank



Mr Nam Kwang Hee

President,
Korea Environmental Industry and
Technology Institute

Clean Environment Leaders Summit

The Clean Environment Leaders Summit (CELS) was a dedicated programme with three sessions designed to provide opportunities for environment leaders to connect and forge new partnerships to advance sustainability, address challenges, and enhance their knowledge of the industry. The sessions enabled delegates to share their expertise, participate in panel discussions, and exchange ideas with leaders in an interactive setting.

In 2018, Mr Masagos Zulkifli, Singapore's Minister for the Environment and Water Resources, opened the session by calling on both governments and private businesses to openly embrace the circular economy. The Minister shared Singapore's efforts in curbing waste generation and realising the circular economy, "The Sustainable Singapore Blueprint outlines part of our strategy to become a zero-waste nation and achieve a 70% recycling rate by 2030." Minister Masagos emphasised the importance of international relations and trade in spurring industry growth, explaining that the circular economy does not end at national borders due to the global nature of manufacturing supply chains.



CELS Session 1 – Policy And Regulation Panel Discussion: Protecting the Environment and Public Health

Dr Amy Khor, Senior Minister of State for Singapore's Ministry of Health and Ministry of the Environment and Water Resources, highlighted the importance of establishing a clear vision of what the circular economy was and how it would function, as well as the importance of achieving buy-in from the private sector. The Honourable James Shaw, Minister for Climate Change, New Zealand, shared his country's challenges in adopting the circular economy — as a nation that imported almost all of its manufactured goods, China's decision

to prohibit recycling materials from abroad meant New Zealand could not export a significant proportion of its waste. Instead, the country now had to innovate to better manage waste.

Dr Marcus Gover, CEO of the UK's WRAP, stressed the importance of having a balance between regulation and market forces to drive and incentivise the circular economy.



CELS Session 2 – Business Innovation, Models, Best Practices

Panel Discussion: Innovative business concepts in pursuit of environment sustainability



Members of the panel raised the point that companies should rethink products and their impact on the environment. Professor Dr Michael Braungart of Leuphana University of Lüneburg and CEO of the Environmental Protection and Encouragement Agency of Hamburg, noted that effectiveness – not efficiency – should be the core concept for companies operating in the sustainability space. “When you are minimising the bad via efficiency, you are optimising the wrong thing,” he said.

CELS Session 3 – Future Technologies and Solutions

Panel Discussion: Global trends in environmental technology

Mr Markus Asch, Deputy CEO and Vice Chairman of the Management Board of Kärcher Group, predicted the rise of “cobots” – robots designed to physically interact with humans in a shared workspace. Instead of robots completely replacing humans, the panel discussed the prediction that Industry 5.0 would see tighter integration between humans and their machine counterparts. The discussion also focused on how protes need to switch from fixed procedures to dynamic procedures. The public bathrooms at Changi Airport were cited as an example, where cleaning schedules are adjusted based on human traffic, with the quieter hours dedicated to more cleaning.



Leaders-Experts Forum

The Leaders-Experts Forum (LEF) bridged the gap between environmental leaders and technical experts, allowing them to discuss best practices, strategies and technological solutions. In 2018, LEF speakers highlighted the symbiotic relationship between good leaders and great ideas.

Ms Low Yen Ling, Senior Parliamentary Secretary for Singapore's Ministry of Education and Ministry of Manpower, opened the session by driving home the threat of climate change, as well as the role the government played in championing change. On waste management, Mr Philip Heylen, Honorary Vice Mayor of Antwerp, Belgium, advised leaders, "Don't look at waste as waste. Look at it as material." That mentality, according to Mr Heylen, would trickle down to the general population as well. "Yesterday is not ours to recover, but tomorrow is ours to win or lose, and we have the chance to do that," he said.



Clean Environment Convention



The Clean Environment Convention (CEC) was the technical segment of CESG, where industry leaders, academics and regulators networked, exchanged ideas, and discussed current trends and cutting edge technologies.

CEC Session 1 – Finding the Global Maxima: Optimisation in Environmental Systems

This session focused on how environmental management could be approached using systems thinking. This theme was timely in this age of computational power, and was relevant to many academics and industry players who were searching for optimal solutions to address the needs of governments and private companies.





CEC Session 2 – Nudging Forward with Behavioural Sciences: Creative Ways to Solve Environmental Challenges

This session was geared towards those with technical, social or humanities interests, and revolved around the concept that environmental sustainability is strongly related to human behavior. The theme provided the opportunity for academics, industry players, and government officials to present challenges, propose innovative solutions, or describe case studies that contribute towards making environmental stewardship a social norm.

CEC Session 3 – Smart Grids and Smart Sensors in Environment Management

This theme saw participants discussing current trends, issues, and opportunities associated with the application of smart grids and sensors within each industry sector. Other discussion topics included management of big data, physical or conceptual issues in incorporating such technology in existing infrastructure, and potential growth possibilities.



CEC Session 4 – Fast Forward: Accelerating Automation in the Environmental Sector

This theme focused on robotics and automation, and encouraged discussion and sharing about the technology that can grow environmental sectors. Solution providers from academia and industry were able to showcase their advancements, while governments had the opportunity to learn and prepare for potential disruptions that may affect their operations and workforce.

Clean Environment Regulators Roundtable



Senior environmental policy makers were given the opportunity to discuss unique case studies at the Clean Environment Regulators Roundtable (CERR) 2018. Participants included more than 50 regulators and policy makers from 14 countries and economies including Algeria, Australia, Belgium, Brunei, Cambodia, China, Hong Kong SAR, Laos, Malaysia, Myanmar, USA, Singapore, Sri Lanka and Vietnam. Attendees included Mr Pieter Vervinckt, Deputy Director and part of the European International Policy Unit at the Public Waste Agency of Flanders (OVAM) and Mr Ram Bhaskar, Director-General, Environmental Protection, NEA, Singapore. They discussed potential solutions to key emerging challenges that they face in their home countries, such as

pollution arising from local and transboundary sources, and breakthrough technologies for the monitoring, control and enforcement of environmental pollution.

Among the discussion highlights were Iskandar Malaysia's Green-focused Agenda, the Public Waste Agency of Flanders' soil remediation efforts, and NEA's case studies on Singapore's move to join the global shift towards promoting the use of cleaner fuels and renewable energy through the implementation of carbon pricing, as well as the adoption of innovative waste management and resource recovery technologies in Singapore's upcoming Integrated Waste Management Facility.



Environment & Water Leaders Forum

Jointly organised by CESG and SIWW, the Environment & Water Leaders Forum was a dedicated platform for world experts and leaders from government, industry and international organisations to share insights on cross-disciplinary environmental and water policies, governance issues, emerging challenges, and examining the respective roles of key stakeholders in co-creating liveable and sustainable cities of the future.

The discussions at the 2018 Forum focused on the theme “Closing the Loop – Catalysing a Resilient and Sustainable Future”. Experts and leaders from the government, business and international organisations shared their views on the foundations of a circular economy, and how sustainable resource management could support global climate goals as outlined in the Paris Agreement on climate change.



Business Forums



At each Summit, the Business Forum platform holistically explored new business opportunities, technology and solutions. These special sessions gave insights into how best to build business partnerships in Singapore and around the world. CESG 2018 featured the E-waste Business Forum, Tuas Water Reclamation Plant and Integrated Waste Management Facility Forum, China Innovation Forum and South Asia Business Forum.

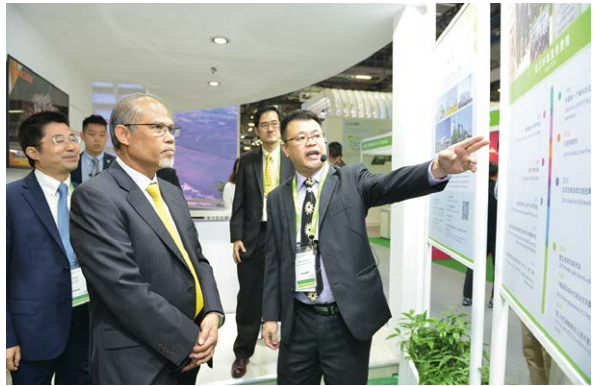
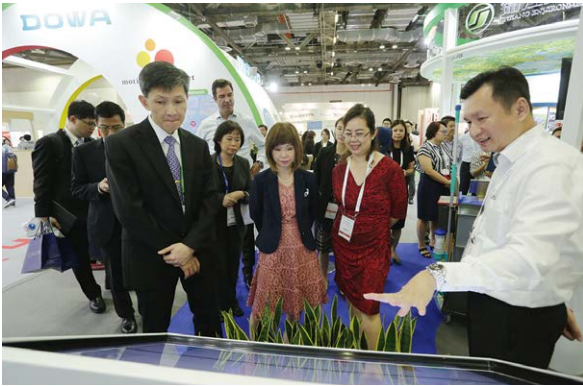
INCUBATE Partnership Signing

The Environmental Services Industry Transformation Map was launched in December 2017 by NEA, unveiling the strategies and initiatives to transform Singapore's environmental services industry.

INnovating and **CU**rating **B**etter Automation and **T**echnologies for **E**nvironmental Services (INCUBATE) embodies the partnership between various stakeholders and the Government to collectively innovate and curate better technologies, solutions and innovations for the environmental services industry. The INCUBATE Partnership Signing Ceremony on 9 July 2018 saw 11 new partners come on board the Partnership.



City Solutions Singapore Expo



The City Solutions Singapore (CSS) Expo 2018 was a bustling showcase comprising Environment@CSS, Water@CSS and Cities@CSS. The Expo was a one-stop platform for solution providers to showcase their solutions and services to potential buyers, including those from the Environmental Management and Clean Technology sectors.



NEA Innovation Pavilion and Innovation Pitch

Featuring 13 innovators, the NEA Innovation Pavilion and Innovation Pitch was a showcase of the latest environmental R&D and innovations in Singapore. Visitors had the opportunity to connect with researchers, explore new ideas and concepts, and interact with the prototypes and solutions.



Industry Night

Industry Night provided an informal setting for business networking, where visitors from industry, academia and government explored new collaborations and forged partnerships amidst live music performances and refreshments.



Site Visits

Attendees at the site visits had the opportunity to tour Singapore's Semakau Landfill, Our Tampines Hub, and the Tuas South Incineration Plant and Waste-to-Energy Research Facility, as well as experience first-hand how waste management policies and ideas could be implemented successfully.



Register early to secure your exhibition or sponsorship spot for CESG 2021. Email sales@cleanenvirosummit.sg to find out more!



Singapore Packaging Agreement Awards 2018

The annual Singapore Packaging Agreement (SPA) Awards serve to recognise signatories who have made notable efforts and achievements in reducing packaging waste.

In 2018, 13 signatories were selected to receive the SPA Awards. They received the awards from Mr Masagos Zulkifli, Minister for the Environment and Water Resources, at the awards presentation ceremony held on 10 July 2018. Recipients of the 2018 awards include Nestlé Singapore (Pte) Ltd, Resorts World Sentosa, and Australian Fruit Juice (S) Pte Ltd.



Co-located Sessions

CESG 2018 also hosted a number of co-located sessions, that included:

- Green Growth & Business Forum 2018
- Partners for the Environment
- Special ASEAN Ministerial Meeting on Climate Action
- Technical Briefing on Innovation Call for Environmental Solutions
- Green Jobs Symposium



Contact us at info@cleanenvirosummit.sg
to pre-register your interest in CESG 2021!



Acknowledgements

STRATEGIC PARTNERS



SUPPORTING ORGANISATIONS



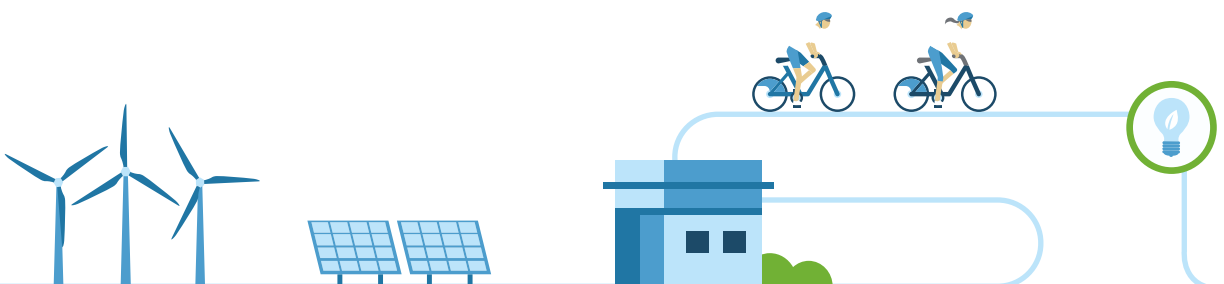
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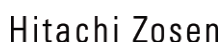
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Mark your calendars for the next edition of CESG
20 to 24 June 2021

www.cleanenviros Summit.gov.sg

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