

MEDIA FACTSHEET

ANNEX A

Environmental Services Industry Transformation Map Strategies and Initiatives

The Environmental Services Industry Transformation Map (ES ITM) comprises 33 initiatives categorised across 12 strategies under the four pillars of Technology and Innovation, Jobs and Skills, Productivity, and Internationalisation. The ES ITM also includes three enablers to advance the initiatives. The strategies and initiatives under the ES ITM are elaborated below.

Technology and Innovation

Strategy 1: Growing capabilities and spurring innovations

- 1a. Developing technology and solutions
- 1b. Launching grant calls for technology adoption
- 1c. Growing innovation centres and facilitating technology connection

NEA will be engaging our partners to identify key challenges and capability development opportunities in preparation for subsequent grant calls for technology solutions. NEA has also been organising regular thematic and broad-based technology connect sessions, and we will continue to engage the industry to prototype, pilot and profile environmental services solutions through the INCUBATE initiative, which stands for '**IN**novating and **CU**rating **B**etter **A**utomation and **T**echnologies for **E**nvironmental Services'. More information on INCUBATE can be found in **Annex B**.

NEA is also working with the Infocomm Media Development Authority (IMDA) on the Smart Facility Management (FM) initiative, which aims to transform the environmental services industry through the use of Internet of Things (IoT), robotics, data analytics and other technology, to ensure a well-maintained built-environment.

Strategy 2: Driving widespread adoption of technology

- 2a. Identifying ready-to-go solutions
- 2b. Re-engineering technology procurement
- 2c. Establishing channels for deployment of ready-to-go solutions

Together with Workforce Singapore (WSG), NEA will continue the engagements with the industry through job redesign clinics to raise awareness on scalable and ready solutions so as to promote wider adoption. We will also explore alternative technology procurement models (such as leasing) with equipment suppliers and service buyers, instead of buying of cleaning or waste management equipment. We will also explore encouraging service buyers to procure technology equipment instead of relying on their service providers.

Moving forward, we will continue to support the industry associations efforts and collectively explore opportunities for the associations to expand their alliance networks, which in turn increases business opportunities for their members.

Jobs and Skills

Strategy 1: Moderating manpower demand

- 1a. Improving infrastructural design to reduce service needs
- 1b. Engendering 'self-serve' mindset
- 1c. Educating the public to reduce waste

To facilitate easier maintenance, cleaning and waste management in building premises, there is a need for better design of such premises. NEA is working with the Future Economy Council's Built Environment Cluster Sub-committee to step up effort in upstream design for maintainability.

As demand for environmental services continue to increase, increasing manpower to meet the service demand is not sustainable. The general public plays an important part in helping to keep our environment clean and minimising waste to reduce service demand. We will continue to work with our partners in schools, organisations and the community to promote care for the environment and engender a "self-serve" and waste minimisation mindset.

Strategy 2: Ensuring sustainable manpower supply

- 2a. Facilitating job redesign and assistive technology
- 2b. Improving industry image
- 2c. Exploring new sources of manpower
- 2d. Facilitating internships
- 2e. Enhancing HR policies and practices
- 2f. Leveraging national Jobs Bank

To facilitate job redesign and promote greater adoption of technology, NEA has been working with WSG, the industry and solution providers to facilitate and drive adoption of scalable and ready job redesign solutions. Companies keen to redesign job roles can tap on funds from WSG's WorkPro Job Redesign Grant to adopt solutions that will make the jobs of older workers easier, safer and smarter.

Improving the image of the environmental services industry is also key in attracting new sources of manpower, such as the mid-career switchers, back-to-work women and young people into the industry. Some examples include the development of a set of industry-wide uniform guidelines, organisation of appreciation events for environmental services professionals, and distribution of workforce collaterals to showcase the wide variety of environmental services job roles available. NEA is also working with companies and Institutes of Higher Learning (IHLs) to increase internship opportunities and placements within the industry.

With the strong push for technology adoption, job roles are not expected to stay the same. Access to HR diagnostic tools and assistance for consultancy services will be provided to help strengthen companies' Human Resources policies and practices in this transformation journey. For the Singaporean workforce, industry information, upskilling options and jobmatching services will be made available via MySkillsFuture.sg, a one-stop online portal

for users to access the Jobs Bank as well as resources related to jobs, education and skills training. WSG's Careers Connect and NTUC's e2i centres also offer a suite of customised career matching services to guide individuals interested in joining the environmental services industry in their job search and career journey.

Strategy 3: Building a skilled and resilient workforce

- 3a. Developing Skills Framework for Environmental Services
- 3b. Developing apprenticeship and scholarship programmes
- 3c. Facilitating PET and CET programmes

NEA, SkillsFuture Singapore (SSG) and WSG, together with industry stakeholders, have codeveloped the Skills Framework for Environmental Services. More information can be found in **Annex C**.

To prepare our workforce for better jobs, NEA is working with Institutes of Higher Learning (IHLs), the union and industry stakeholders to develop apprenticeship and scholarship opportunities. A programme that will benefit the environmental services workforce will be rolled out in early 2018 and details will be announced by the Post-Secondary Education Institution (PSEI) when ready. More pre-employment training (PET) and continuing education and training (CET) programmes will be gradually put in place to address the skills and training needs of the industry.

Productivity

Strategy 1: Driving change in procurement practices

- 1a. Building capabilities of service buyers and providers
- 1b. Improving adoption of outcome-based contract

NEA has worked with the Ministry of Finance, Government agencies and industry stakeholders to develop a Guide on Specifications for Outcome-based Cleaning Contract as a reference for service buyers in drafting outcome-based contracts. More information on the Guide can be found in **Annex D**.

Strategy 2: Establishing benchmark indicators

- 2a. Developing activity-based indicators
- 2b. Developing industry manpower indicators

The objective of the activity-based indicators is to (a) provide service providers and buyers with a benchmark on the time taken to complete key cleaning tasks. Such indicators would serve to help them assess work efficiency of cleaners based on standardised cleaning procedures and outcomes; and (b) enable service providers and buyers to quantify work volume, and have a better sense on manpower requirements and deployment.

Through motion time studies of cleaning tasks, NEA has developed the first set of activitybased productivity indicators for washroom and office cleaning. These indicators provide a benchmark for the time taken to complete a cleaning task. For example, the time taken to clean a washroom (with an estimated area of 25 sq metres with three toilet bowls, four urinals and three washbasins etc.) is about 39 minutes. For the indicators, please refer to the following link: www.nea.gov.sg/public-health/public-cleanliness/cleaning-industry.

Apart from the activity-based productivity indicators, NEA will be developing industry manpower indicators, which will serve as a broad guide for service providers and buyers to gauge their workforce needs for the cleaning of premises. It will guide them in ascertaining their manpower needs, ascertain how they fare in terms of manpower productivity as compared to the industry benchmark, and help service buyers to assess and evaluate tender and manpower proposals. Similarly, it would help service providers to be more cognisant of the manpower productivity component when they develop and submit tender proposals to service buyers.

Strategy 3: Strengthening procurement practices

- 3a. Encouraging longer contract period
- 3b. Enhancing contract specifications
- 3c. Enhancing tender evaluation framework

The typical duration of a cleaning contract is two years. Such duration does not encourage the use of machinery/ technology as it does not enable service providers to justify returns of investment. The industry has given feedback that service buyers tend to award contract based on price. As there is a lack of focus on quality and productivity, NEA will work on some recommended guidelines on minimal contract duration and enhance contract specifications to facilitate technology adoption. To enhance the tender evaluation framework, NEA will also develop a guide on Price-Quality ratio and a definitive set of qualitative attributes, with higher weightage on productivity and technology for tender evaluation.

Strategy 4: Improving land use efficiency

- 4a. Creating space for the industry
- 4b. Reusing of closed landfills

The scarcity of land in Singapore will require the waste management industry to explore new ways to better optimise land use. These include land-to-space options and the reuse of closed landfills.

Internationalisation

Strategy 1: Enhancing market access

- 1a. Increasing mindshare of Singapore's capabilities
- 1b. Leveraging standards and conformance
- 1c. Profiling through influential and marketing platforms
- 1d. Adopting relevant business models for export competitiveness

NEA will continue to help profile the environmental services industry's capabilities through our engagement with our overseas counterparts, as well as in international projects. We will continue to support our environmental services companies and associations in their various overseas business trips to source for technology or to promote their capabilities at international platforms and events such as CleanEnviro Summit Singapore 2018.

Strategy 2: Growing capabilities to capture market potential

- 2a. Enhancing export capabilities of technology/ service providers

In meeting our local challenges, our environmental services companies would have built up capabilities and project references that could be translated and adapted in other cities with

the same aspirations for a clean and liveable environment. NEA will be working with such companies that are gearing for overseas expansion to identify the right markets to enter.

Strategy 3: Building scale and offering integrated solutions

3a. Offering integrated solutions through cluster approach by forming consortiums/ joint ventures across Built Environment Cluster

One of the key initiatives is to build scale for export of our solutions. NEA will continue to work through the trade associations and relevant government agencies to facilitate such partnerships. We will also work across the industry sectors in the Built Environment Cluster to help form partnerships and offer holistic and integrated solutions for city planning and development projects overseas.

Enablers

1. Strengthening Trade Associations to support transformation

NEA will support and work with our key association partners – Waste Management & Recycling Association of Singapore (WMRAS) and Environmental Management Association of Singapore (EMAS) to spearhead enterprise-level development initiatives and industry-level collaboration as well as to lead business missions and introduce business opportunities to the ES industry.

2. Using standards and regulations to support ITM initiatives

The regulatory sandbox concept is currently being explored to try out innovative waste management and cleaning technologies especially when new solutions have a risk of failure, either from technological inadequacy or public feedback. Such a concept will allow the testbed of technologies in a controlled environment within a fixed duration without compromising on public safety and sanitation/ hygiene standards.

3. Establishing demonstration sites to trial solutions and to upskill workers

NEA is signing a Letter of Intent with our first batch of INCUBATE partners at the launch event to officiate the beginning of a series of trials that will be carried out at our partners' premises over the next few years. More details can be found in **Annex B**.

Overview of ES ITM Strategies and Initiatives

Technology & Innovation	Jobs & Skills	Productivity	Internationalisation
<p><u>Strategy 1: Growing capabilities and spurring innovations</u> 1a. Developing technology and solutions 1b. Launching grant calls for technology adoption 1c. Growing innovation centres and facilitating technology connection</p> <p><u>Strategy 2: Driving widespread adoption of technology</u> 2a. Identifying ready-to-go solutions 2b. Re-engineering technology procurement 2c. Establishing channels for deployment of ready-to-go solutions</p>	<p><u>Strategy 1: Moderating manpower demand</u> 1a. Improving infrastructural design to reduce service needs 1b. Engendering ‘self-serve’ mindset 1c. Educating the public to reduce waste</p> <p><u>Strategy 2: Ensuring sustainable manpower supply</u> 2a. Facilitating job redesign and assistive technology 2b. Improving industry image 2c. Exploring new sources of manpower 2d. Facilitating internships 2e. Enhancing HR policies and practices 2f. Leveraging national Jobs Bank</p> <p><u>Strategy 3: Building a skilled and resilient workforce</u> 3a. Developing Skills Framework for Environmental Services 3b. Developing apprenticeship and scholarship programmes 3c. Facilitating PET and CET programmes</p>	<p><u>Strategy 1: Driving change in procurement practices</u> 1a. Building capabilities of service buyers and providers 1b. Improving adoption of outcomebased contract</p> <p><u>Strategy 2: Establishing benchmark indicators</u> 2a. Developing activity-based indicators 2b. Developing industry manpower indicators</p> <p><u>Strategy 3: Strengthening procurement practices</u> 3a. Encouraging longer contract period 3b. Enhancing contract specifications 3c. Enhancing tender evaluation framework</p> <p><u>Strategy 4: Improving land use efficiency</u> 4a. Creating space for the industry 4b. Reusing of closed landfills</p>	<p><u>Strategy 1: Enhancing market access</u> 1a. Increasing mindshare of Singapore’s capabilities 1b. Leveraging standards and conformance 1c. Profiling through influential and marketing platforms 1d. Adopting relevant business models for export competitiveness</p> <p><u>Strategy 2: Growing capabilities to capture market potential</u> 2a. Enhancing export capabilities of technology/service providers</p> <p><u>Strategy 3: Building scale and offering integrated solutions</u> 3a. Offering integrated solutions through cluster approach by forming consortiums/joint ventures across Built Environment Cluster</p>
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