Country 3R Progress Report

Name of the Country: Singapore

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Note: Kindly fill in Computer-typed and send it in PDF file

Progress and achievements towards implementation of the Ha Noi 3R Declaration
-Sustainable 3R Goals for Asia and the Pacific (2013-2023)-

With the objective of demonstrating renewed interests and commitments of Asia-Pacific countries towards realizing a resource efficient society, the Fourth Regional 3R Forum in Asia-Pacific in 2013 adopted the good-will and legally non-binding "***Ha Noi 3R Declaration – Sustainable 3R Goals for Asia and the Pacific 2013-23.***" The objective of the Country Reporting is to share among international community with various initiatives launched and efforts made (such as new policy instruments, legislations, regulations, institutional arrangements, investments or financing, technological innovation or intervention, partnership mechanisms, such as PPPs, etc.) by the member countries of the Forum in addressing each of the underlined goals of the Ha Noi 3R Declaration. This would help the member countries to share various best practices in 3R and resource efficiency areas across the region. In addition, it would also help bi-lateral and multi-lateral development agencies, donors, development banks in assessing the sustainable needs and challenges of those countries to better plan their existing as well as future capacity building programmes and technical assistance in the areas of 3Rs and sustainable waste management.

With the cooperation of other related ministries, organization and agencies, we request you to kindly fill and COMPUTER-TYPED in the below table and send in PDF format as much as possible with relevant data/information. If additional spaces are required, separate sheets could be attached.
Thank you very much for your kind cooperation.

Secretariat of the Regional 3R Forum in Asia and the Pacific
United Nations Centre for Regional Development (UNCRD)
Email: 3R@uncrd.or.jp

I. 3R Goals in Urban/Industrial Areas (3Rs in municipal solid waste)	
Goal 1	Significant **reduction** in the quantity of **municipal solid waste** generated, by instituting policies, programmes, and projects at national and local levels, encouraging both producers and consumers to reduce the waste through greening production, greening lifestyle, and sustainable consumption.

Q-1 What specific 3R policies, programmes and projects, are implemented to reduce the quantity of municipal solid waste?

The National Environment Agency (NEA) in Singapore has implemented various measures and initiatives to encourage businesses and consumers to reduce the amount of waste generated. Below are some examples:

National Recycling Programme

Singapore launched the National Recycling Programme (NRP) in 2001 to provide a convenient means for residents living in public high-rise apartments and private landed housing estates to recycle their paper, plastic, metal and glass waste streams. It started off with the provision of recycling bags to households, with fortnightly door-to-door collection. To support residents' recycling efforts, a recycling bin was provided at every public housing apartment block and landed house from 2014 in place of the fortnightly door-to-door collection services. The NRP was enhanced with more frequent collection at landed houses and a dedicated collection of garden waste.

In conjunction with the Year Towards Zero Waste in 2019, NEA has also placed new labels on all blue recycling bins/chutes at existing landed homes and HDB estates, with photos of recyclables and non-recyclables to help residents identify the recyclable items more easily. To address the misperception that recyclables are wrongly emptied into waste collection trucks (when they are in fact recycling trucks), all recycling trucks were painted blue last year so that they can be identified with the blue recycling bins. They now carry the 'I am a recycling truck' label and recycling logo.

More information may be found here:

- National Recycling Programme:

https://www.nea.gov.sg/our-services/waste-management/3r-programmes-and-resources/national-recycling-programme

Packaging Partnership Programme

To continue the support to companies in their journey towards adopting sustainable packaging waste management practices after the end of the Singapore Packaging Agreement, the Singapore Manufacturing Federation partnered NEA to introduce a new industry-led programme called the Packaging Partnership Programme (PPP) in 2021.

The PPP is a joint capability development programme to build industry capability in sustainable packaging waste management, and support companies in fulfilling current and future packaging regulatory requirements, including the Mandatory Packaging Reporting (MPR).

More information on the PPP may be found here:
http://packaging-partnership.org.sg

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Mandatory Waste Reporting for Large Commercial & Industrial Premises

In April 2014, the Environmental Public Health Act (EPHA) was amended to require operators of large premises to report waste data and submit waste reduction plans (including setting of targets) for hotels with more than 200 rooms and shopping malls with net lettable areas of more than 4,600m^2. The reporting exercise is intended to help build greater awareness among these operators of the potential for improving waste management systems at their premises. From 2020, mandatory waste reporting was extended to cover large industrial premises (viz. factories with gross floor areas larger than 20,000 m^2 and warehouses with gross floor areas larger than 50,000 m^2) and convention/exhibition centres with gross floor areas larger than 8,000 m^2.

Community Engagement

NEA engages the community to increase 3R awareness and participation.

Some examples of instilling a 3R culture through different channels are:

i) 3R Guidebooks and Educational materials
NEA works with various stakeholders on 3R outreach and co-develops 3R Guidebooks. 3R Guidebooks for households, condominiums & private apartments, shopping malls, hotels, industrial developments and events may be found here: *https://www.nea.gov.sg/corporate-functions/resources/practices-and-guidelines/guidelines*.

Educational 3R pamphlet-cum-posters and "What to Recycle" fridge magnets have been produced for distribution at community events.

ii) Say YES to Waste Less campaign (SYTWL)
NEA launched the third SYTWL campaign in 2021, with focus on encouraging the public to lead a sustainable lifestyle by reducing the use of disposables and food wastage. The campaign leveraged a comprehensive suite of media touchpoints such as outdoor, digital, and social media channels. In 2021, 169 partners came on board, an increase from 95 partners in 2020. These partners comprise corporates, social enterprises, interest groups, non-governmental organisations (NGOs), and Community Development Councils (CDCs). Covering close to 3,000 premises, the partners have committed to various actions to reduce the use of disposables and/or food wastage.

More information may be found here:
http://cgs.gov.sg/sayyes

iii) RecycleRight campaign
NEA recently launched the second Recycle Right campaign on 14 Jan 2022 this year and introduced a new recycling mascot, Bloobin, who is a disgruntled blue recycling bin frustrated by the years of contamination, and on a mission to educate the public on how to recycle right. Educational and user-friendly content has been developed to encourage the

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public to cultivate good recycling practices and guide them on items that can and cannot be recycled such as the website recyclables filter, QR code links on the blue recycling bins, and last-mile nudges at public housing general waste and recycling chutes. To nurture proper recycling habits, interactive educational resources are developed for pre-schoolers to JC students, an Inter-Institutes of Higher Learning challenge, 'Ready, Set, Recycle' to mobilise youths to take action for recycling. NEA is also collaborating with the community, non-Governmental organisations, corporate and industry partners to encourage the public to recycle more and recycle right, and to explore and implement new methods of making recycling convenient in neighbourhoods and homes.

More information may be found in the Media Release here: *https://www.nea.gov.sg/media/news/news/index/three-in-five-households-recycled-regularly-in-2021-singaporeans-are-encouraged-to-recycle-more-and-recycle-right*

The website filter can be found here: *https://go.gov.sg/recycleright/*

iv) Engagement sessions for shopping malls and hotels

NEA reaches out to different groups of shopping malls and hotels to encourage them to implement 3R programmes to minimise waste generation and improve their recycling rates. NEA is also a member of the Hotel Sustainability Committee led by the Singapore Hotel Association, to drive industry-wide adoption of sustainability practices by hotels. SHA and Singapore Tourism Board organised a Sustainability Conference and Marketplace event on 21 Mar 2022, where the Hotel Sustainability Roadmap was launched and it announced key focus areas and strategies to galvanise the industry towards achieving key sustainability outcomes, as well as showcase successful case studies from hotels.

Q-2 What is the level of participation of households in "source" segregation of municipal waste streams? (Please check the appropriate box)

☐ Very High (> 90%)
☐ High (>70%)
☒ Average (50-~70%)
☐ Low or not satisfactory (< 50%)
☐ Does not exist

***Q-3 Total annual government* expenditure per capita (US$ per capita) in municipal solid waste management in 2014-2015**

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Challenges (policy/ institutional/ technological/ financial) faced in implementation:

One of the challenges faced in implementing waste reduction initiatives is the difficulty in measuring and tracking the amount of waste generated and recycled by individual households,

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unlike energy or water consumption, which can be easily measured using meters.

Examples of pilot projects, master plans and/or policies developed or under development – include websites where relevant

Zero Waste Masterplan

In August 2019, then Ministry of the Environment and Water Resources (MEWR) (currently known as Ministry of Sustainability and the Environment or MSE) launched the Zero Waste Masterplan, which maps out Singapore's path towards becoming a Zero Waste Nation. The Masterplan outlined our key strategies to manage three priority waste streams – electrical and electronic waste (or e-waste), food waste and packaging waste, including plastics. The Masterplan has set an ambitious target to achieve 30% reduction in waste-to-landfill per capita per day (from 2018) which is on top of an earlier commitment to a 70% overall recycling rate by 2030. Under the Singapore Green Plan 2030 outlined below, there is also a target to achieve 20% reduction in waste-to-landfill per capita per day by 2026.

More information may be found here:
https://www.towardszerowaste.gov.sg/zero-waste-masterplan/

Singapore Green Plan 2030

In 2021, Singapore unveiled the Singapore Green Plan 2030, a whole-of-nation movement to advance Singapore's national agenda on sustainable development. It is spearheaded by five ministries – Ministries of Education, National Development, Sustainability and the Environment, Trade and Industry, and Transport, and supported by the Whole of Government. There are five key pillars under the plan:

a) City in Nature: to create a green, liveable and sustainable home for Singaporeans
b) Sustainable Living: to make reducing carbon emissions, keeping our environment clean, and saving resources and energy a way of life in Singapore
c) Energy Reset: to use cleaner energy and increase our energy efficiency to lower our carbon footprint
d) Green Economy: to seek green growth opportunities to create new jobs, transform our industries, and harness sustainability as a competitive advantage; and
e) Resilient Future: to build up Singapore's climate resilience and enhance our food security.

More information can be found at www.greenplan.gov.sg.

Regulated E-waste Management System

In 2018, the government announced that a regulated e-waste management system would be introduced by mid-2021. This would ensure that electrical and electronic waste (e-waste) is managed effectively and efficiently in Singapore, with the assignment of responsibilities to key stakeholders through an Extended Producer Responsibility (EPR) approach. The system will ensure the proper collection and handling of e-waste and the extraction of valuable resources from

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e-waste. The system will also safeguard the environment and our public health in Singapore. Under the EPR framework, companies that import or manufacture regulated electrical and electronic equipment (EEE) for supply in Singapore will be made responsible for the collection and proper treatment of their EEE when they reach end-of-life. The EPR framework has been implemented since 1 July 2021 and ALBA E-Waste Smart Recycling Pte Ltd was appointed and licensed by NEA to operate the Producer Responsibility Scheme (PRS), to coordinate and conduct public collection of regulated consumer e-waste. All e-waste collected under the e-waste management system will have to be channeled to licensed e-waste recyclers. The system will be implemented through the Resource Sustainability Act administered by the NEA.

More information may be found here:
https://www.nea.gov.sg/e-waste-epr

Important policies/programmes/projects/master plans the government plans to undertake within next five years (2016~2021)

Resource Sustainability Act

The Resource Sustainability Act (RSA) was enacted in Oct 2019 to give legislative effect to the regulatory measures targeting the three key waste streams under the Zero Waste Masterplan. The RSA extends the regulation upstream, and sends a signal to producers to take into account their impact on the environment. Under the RSA, producers of packaged products and retailers such as supermarkets will need to report data annually on the packaging placed on the market, and submit plans to reduce, reuse or recycle packaging. This will be implemented in 2021, with the first packaging report to be submitted by 1Q 2022 (for 2021 data). NEA will also implement the Extended Producer Responsibility (EPR) framework for e-waste, and mandate the segregation for treatment of food waste by large food waste generators.

More information on the RSA can be found here:
https://www.sso.agc.gov.sg/Acts-Supp/29-2019

Packaging Waste Management

There will be mandatory requirements for more sustainable packaging waste management in 2021, starting with the mandatory packaging reporting (MPR). Companies that supply regulated goods in Singapore , such as manufacturers and importers of packaged products, as well as retailers such as supermarkets, will be required to report data on the packaging that they introduce into Singapore annually. They will also need to develop 3R plans for packaging (i.e. plans to reduce, reuse or recycle packaging) in Singapore. For a start, the MPR requirements will apply to companies with an annual turnover of more than $10 million. Companies will make the first submission of their data (from 1 January to 31 December 2021) and 3R plans in early 2022. The MPR aims to bring greater awareness to companies on the potential for waste reduction within their business operations, and spur them to take action to reduce the amount of packaging used and packaging waste disposed of. The MPR will also lay the foundation for an Extended Producer Responsibility (EPR) framework for managing packaging waste, including plastics. This ensures

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producers are physically and/or financially responsible for the collection and management of the materials they use to package their products.

More information may be found here:
https://www.nea.gov.sg/packaging

Building on MPR as a foundation, NEA will be developing an EPR framework for packaging waste management, where producers will take on financial and/or physical responsibility to take back packaging waste so as to take on a circular economy approach. Coupled with the development of our local recycling landscape, the EPR will enhance Singapore's resource resilience by turning more of our trash into treasure. The first phase of EPR for packaging will be a Beverage Containers Return Scheme where with the refunds offered to consumers when they return their empty beverage containers to designated return points.

Driving Innovation Excellence in NEA

NEA is investing in innovation and R&D to bring Singapore closer to our vision of becoming a Zero Waste Nation. Our efforts include the S$45 million 'Closing the Waste Loop' (CTWL) R&D initiative, the upcoming Tuas Nexus which will harness synergies between water, waste and energy to maximise resource efficiency, and the development of NEWSand to close the waste loop.

Is this Goal relevant for your country? ☒ Highly ☐ Partially ☐ Not at all

I. 3R Goals in Urban/Industrial Areas (3Rs in municipal solid waste)	
Goal 2	Full-scale utilization of the organic component of municipal waste, including food waste, as a valuable resource, thereby achieving multiple benefits such as the reduction of waste flows to final disposal sites, reduction of GHG emission, improvement in resource efficiency, energy recovery, and employment creation.

Q-1 Does the central government have policies or support to utilize or reduce the organic waste such as composting, energy recovery and improving efficiency in food processing?

Wood & Horticultural waste recycling

Waste collectors transporting wood and horticultural waste are not allowed to dispose of such waste at the waste-to-energy (WtE) plants. Such waste are sent to wood and horticultural waste recycling facilities to be processed into compost or woodchips intended for energy conversion at biomass plants.

Horticultural waste collected from landed houses under the NRP (refer to Goal 1, Q-1) and from public landscaping works are sent to the above-mentioned recycling facilities.

Food waste reduction

To address food waste in the supply chain, food waste minimisation guidebooks have been developed for food manufacturing establishments, food retail establishments and supermarkets. The guidebooks aim to help businesses develop their own food waste minimisation plan by outlining steps that can be taken to minimise food waste from businesses' operations. The guidebooks also feature case studies of food waste minimisation efforts by industry players to encourage other companies to adopt similar initiatives, and incorporate guidelines on the proper handling and re-distribution of unsold and excess food to address food safety concerns on the donation of unsold and excess food to food distribution organisations. The guidebooks may be found here:
https://www.nea.gov.sg/our-services/waste-management/3r-programmes-and-resources/food-waste-management/food-waste-management-strategies.

Food waste valorisation

Food waste valorisation is the conversion of food waste or by-products into higher value products that contribute back to the food supply chain. This is aligned with the circular economy approach where useful materials can be recycled back into the supply chain to create new products. It is one of the food waste recycling pathways that can help to close the food waste loop. To raise awareness among food manufacturers and other generators of food waste/by-products on the different technological solutions and recycling options, and facilitate link-ups between food waste generators and solution providers/recyclers, NEA has been engaging companies and other government agencies to look into food waste valorisation solutions. NEA organised two inaugural industry awareness briefings focusing on food waste valorisation solutions for homogeneous by-products (e.g., okara waste, barley spent grains, used coffee grounds) in 2020.

More information may be found here:
https://www.nea.gov.sg/our-services/waste-management/3r-programmes-and-resources/food-waste-management/food-waste-valorisation

NEA has introduced the Food Resource Valorisation Awards (FVA) in 2021 to recognise the

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efforts of companies that engage in food waste valorisation and raise awareness of the food waste valorisation concept. The FVA seek to encourage more organisations to adopt and develop food waste valorisation solutions, by recognising companies that engage in the conversion of food waste, such as homogenous by-products, rejects and mixed food waste, into products that contribute to a sustainable economy.

More information on the FVA may be found here:
https://www.nea.gov.sg/fva

Energy recovery from organic waste

Organic waste disposed of is not landfilled; instead it is treated at WtE plants. The WtE plants generate enough electricity to meet about 3% of Singapore's needs. Alternative treatment solutions for food waste such as onsite food waste digesters/composters and co-digestion of food waste with used water sludge have been piloted.

Mandatory Food Waste Segregation

From 2021, it is mandatory for developers of new commercial and industrial developments, where large amounts of food waste are expected to be generated, to set aside space for installing on-site food waste treatment systems in their design plans. From 2024, it will be mandatory for the owners and operators of large commercial and industrial developments, where substantial amounts of food waste are generated, to segregate their food waste for treatment. The segregated food waste can be either treated onsite or sent to the food waste treatment facility that is being developed at the upcoming Tuas Nexus, where food waste will be co-digested with sewage sludge to produce biogas. The biogas will be used to improve the Tuas Nexus waste-to-energy facility's electricity generation efficiency.

Q-2 What is happening to country's organic waste? (Please check the appropriate box)

☐ mostly landfilled
☒ mostly incinerated
☐ both landfilled and incinerated
☐ mostly open dumped or open burned

In 2020, 64% and 80% of wood and horticultural waste respectively were either recycled or converted into energy at biomass plants, while 19% of food waste was recycled. The food waste recycled was mainly homogeneous food waste from food manufacturers (e.g., spent yeast/grains from beer brewing, soya bean and bread waste) and were segregated at source for conversion into animal feed. Numerous operators of hotels, supermarkets, schools and food centres have also installed on-site food waste treatment machines. All remaining organic waste was sent to WtE plants for energy recovery, while no organic waste was landfilled.

Challenges (policy/ institutional/ technological/ financial) faced in implementation:

It is challenging to get households to segregate their food waste for treatment.

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Examples of pilot projects, master plans and/or policies developed or under development – include websites where relevant

Co-digestion with wastewater sludge

Source-segregated food waste is sent to a demonstration facility at Ulu Pandan Water Reclamation Plant. The food waste is co-digested with used water sludge to generate biogas. The co-digestion process will be scaled up and implemented at the upcoming Integrated Waste Management Facility and Tuas Water Reclamation Plant - collectively known as the Tuas Nexus. The food waste treatment facility at Tuas Nexus will serve as an off-site treatment option for owners and operators of premises segregating their food waste.

More information may be found here:
https://www.nea.gov.sg/media/news/news/index/tuas-nexus-singapore-s-first-integrated-water-and-solid-waste-treatment-facility-begins-construction

We have embarked on pilot trials to study food waste segregation and collection from high-rise buildings. A "Food Waste? Don't Waste!" pilot was conducted at the GreenLace HDB estate in Tampines. Residents were encouraged to segregate their food waste and dispose of it in dedicated food waste bins located on the ground floor. The food waste was then collected and sent to the on-site food waste treatment system located at the nearby Our Tampines Hub (OTH). The pilot has since transited to a community gardening/composting model where the food waste is composted at a community garden set up at the rooftop of a nearby carpark.

Information on the pilot's results is available at www.towardszerowaste.gov.sg/zero-waste-masterplan/chapter3/food. Currently, we are also studying other models of food waste segregation for households.

Important policies/programmes/projects/master plans the government plans to undertake within next five years (2016~2021)

Mandatory Food Waste Segregation

From 2021, it is mandatory under the RSA for developers of new commercial and industrial developments, where large amounts of food waste are expected to be generated, to set aside space for installing on-site food waste treatment systems in their design plans. From 2024, it will be mandatory for the owners and operators of large commercial and industrial developments, where substantial amounts of food waste are generated, to segregate their food waste for treatment. The public sector will also take the lead by requiring all its buildings with food and beverage (F&B) establishments to adopt this food waste recycling measure from the same timeframe.

More information may be found here:
https://www.nea.gov.sg/media/news/news/index/businesses-required-to-segregate-food-waste-for-treatment-under-new-legislation

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Is this Goal relevant for your country? ☒ Highly ☐ Partially ☐ Not at all	

I. 3R Goals in Urban/Industrial Areas (3Rs in municipal solid waste)

Goal 3 Achieve significant **increase in recycling rate** of recyclables (e.g., plastic, paper, metal, etc.), by introducing policies and measures, and by setting up financial mechanisms and institutional frameworks involving relevant stakeholders (e.g., producers, consumers, recycling industry, users of recycled materials, etc.) and development of modern recycling industry.

Q-1 What is the recycling rate of various recyclables? (Please check the appropriate cell & add more waste streams as relevant for the country)

Rate / Type	Very High (>90%)	High (>70%)	Average (50-~60%)	Poor (<50%)	Recycling does not exist	Definition of recycling rate*
Paper/ Cardboard				✓		1
Plastics				✓		1
Ferrous Metal	✓					1
Non-ferrous Metals	✓					1
Construction Waste	✓					1
Used Slag	✓					1
Scrap Tyres	✓					1
Wood			✓			1
Horticultural Waste		✓				1
Glass				✓		1
Ash & Sludge				✓		1
Food				✓		1
Textile/Leather				✓		1
E-waste ***(subsumed under Others)**	-	-	-	-	-	-
Others (stones, ceramic, rubber, etc.)				✓		1

**Note: Please specify in the cell which of the following definitions(ie., 1 or 2 or 3) is followed for recycling rate*
Definition 1: (collected recyclable waste)/(estimated generation of waste)
Definition 2: (volume of utilized recyclable waste)/(volume of raw material)
Definition 3: (volume of utilized recyclable waste)/(volume of collected waste for recycling)

More information on the 2020 Waste & Recycling Statistics may be found here:
https://www.nea.gov.sg/our-services/waste-management/waste-statistics-and-overall-recycling

Q-2 What specific policies are introduced at local and national level for prevention or reduction of waste streams – paper, plastic, metal, construction waste, e-waste?

The NRP (refer to Goal 1, Q-1) provides a convenient means for residents living in public high-rise apartments and private landed housing estates to recycle their paper, plastic, metal and glass

waste streams. Singapore adopts a single stream collection system where all types of recyclables (i.e., paper, metal, plastic and glass items) can be deposited into the blue recycling bins. The recyclables are sent to Materials Recovery Facilities (MRFs) where the different types of recyclables are sorted, baled and sent to local/overseas recycling plants to be processed.

More information may be found here:
https://www.nea.gov.sg/our-services/waste-management/3r-programmes-and-resources/national-recycling-programme

All new public and private high-rise residential developments taller than 4 storeys are fitted with Centralised Chutes for Recyclables (CCR), providing parity of convenience for recycling and waste disposal, from 2014 and 2018 respectively.

Packaging Partnership Programme and Mandatory Waste Reporting

Other initiatives such as the PPP (refer to Goal 1, Q-1) targets to reduce/recycle packaging waste (e.g., paper, plastic, metal, glass etc.), while Mandatory Waste Reporting (refer to Goal 1, Q-1) aims to build greater awareness among managers of large commercial premises on the potential for improving their waste management systems.

Metal Recovery Facility

The metal recovery facility in Singapore uses magnetic and eddy current separators to recover ferrous and non-ferrous metals from the incineration bottom ash (IBA) generated by the WtE plants.

More information may be found here:
https://www.nas.gov.sg/archivesonline/speeches/record-details/7ec5296c-4327-11eb-85f4-005056a7c31c

National Voluntary Partnership for the Proper Management of Non-regulated Used Household Electrical/Electronic Products

Building on the existing voluntary e-waste recycling initiatives, the new regulated e-waste management system based on the EPR approach has been established since 1 July 2021, which will entail the assignment of responsibilities to key stakeholders in the EPR.

The system covers end-of-life information and communications technology (ICT) equipment, solar photovoltaic panels, batteries and lamps, and large appliances (including electric mobility devices and large household appliances). Under the EPR framework, producers of regulated electrical and electronic equipment are required to take on responsibility for the collection and proper treatment of e-waste. These producers are companies that manufacture or import regulated electrical and electronic equipment for supply on the local market.

More information may be found here:
https://www.nea.gov.sg/media/news/news/index/nea-to-implement-e-waste-management-system-for-singapore-by-2021

To cater for non-regulated used household electrical/electronic products such as small household appliances, electronic toys and gaming consoles, a National Voluntary Partnership programme

was developed, where industry partners are invited to spearhead repair/recycling programmes for non-regulated used electrical/electronic products, with support and recognition from the NEA. The partnership aims to:

- provide more convenient avenues for the repair of non-regulated electrical/electronic products, such as small household appliances;
- provide more convenient recycling points for the public; and
- build public awareness of repair/recycling avenues for non-regulated household electrical/electronic products.

More information may be found here:
https://www.nea.gov.sg/programmes-grants/schemes/national-voluntary-partnership-for-e-waste-recycling

GreenGov.SG initiative – Public Sector Taking the Lead

Under the GreenGov.SG initiative, the public sector is required to improve the Waste Disposal Index (i.e. amount of waste disposed of per person per day) at public sector premises by 30 per cent by 2030 from 2022 levels. Public sector premises are required to put in place waste reduction measures such as deployment of recycling bins (including e-waste bins) and avoiding the use of disposables during meetings and events.

Q-3 What is the rate of resource recovery from various waste streams?

Please refer to Q-1 (resource recovery rate is taken to be the same as the recycling rate).

Rate / Type	Very High (>90%)	High (>70%)	Average (50-~60%)	Poor (<50%)	Recycling does not exist
Paper				✓	
Plastic				✓	
Metal	✓				
Construction waste	✓				
e-waste (subsumed under Others)	-	-	-	-	-

(Please check the appropriate cell & add more waste streams as relevant for the country)

Q-4 What is the level of existence of resource recovery facilities/ infrastructures in cities?

Level / Type	Every Major City	Few Major Cities only	Does not exist	Supportive policy or programmes exists	No supportive policy or programmes
Paper	✓				
Plastic	✓				
Metal	✓				
Construction waste	✓				
e-waste	✓				

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Goal 3	Achieve significant **increase in recycling rate** of recyclables (e.g., plastic, paper, metal, etc.), by introducing policies and measures, and by setting up financial mechanisms and institutional frameworks involving relevant stakeholders (e.g., producers, consumers, recycling industry, users of recycled materials, etc.) and

[redacted] development of modern recycling industry.

Challenges (policy/ institutional/ technological/ financial) faced in implementation:

It is a challenge to get consumers and producers to embark on waste recycling initiatives especially when additional effort, manpower and/or costs are involved. Generally, consumers and producers are more willing to undertake 3R initiatives when there is substantial net financial benefit. Other challenges faced by corporates in implementing the 3Rs include space constraints for installation of on-site treatment/recycling systems.

There are also challenges in the technological limitations on recycling of certain waste streams such as composite plastic, packaging with multiple layers of materials.

Examples of pilot projects, master plans and/or policies developed or under development – include websites where relevant

Incineration Bottom Ash treatment

Over the next few years, NEA will be developing environmental standards for treated incineration bottom ash (IBA), which we call NEWSand, for use as construction materials in non-structural applications. NEA is currently conducting a field trial using treated IBA in road base and sub-base layers to test its environmental performance. NEWSand will play a key role in diverting our waste sent to landfill.

Reverse Vending Machines

In Oct 2019, the "Recycle N Save", a joint initiative between F&N Foods Pte Ltd and NEA was launched. Under this initiative, as of end 2021, there are 50 Reverse Vending Machines (RVMs) across Singapore in locations such as commercial spaces, sports centres and schools. These RVMs offer small rewards to users when they deposit a minimum number of empty plastic drink bottles and aluminium drink cans. The initiative is aimed at nudging behaviour change and encouraging more Singaporeans to recycle their used beverage containers by giving them a small reward in return. More info on this initiative can be found at https://recyclensave.sg.

Important policies/programmes/projects/master plans the government plans to undertake within next five years (2016~2021)

NEA has been studying the commercial and financial viability of proven recycling solutions and technologies in other countries that can be applied in Singapore. Waste streams to be studied include e-waste and plastic waste. Specifically, the study will look into how a synergistic recycling eco-system with increased productivity for recycling processes would potentially improve the economic viability of recycling locally.

NEA introduced the EPR for e-waste on 1 July 2021, and mandatory packaging reporting requirements in 2021.

For management of plastic waste, NEA is building capabilities on top of the existing mechanical recycling plants in Singapore (which mainly take in the cleaner, post-industrial plastics) and is in discussions with interested companies to explore both mechanical and chemical recycling solutions for post-consumer plastics. One example is our collaboration with Shell to jointly explore a new chemical recycling value chain to convert plastic waste into higher-value products such as pyrolysis oil, which can be upgraded as feedstock to manufacture plastics and chemicals.

More information can be found here:
https://www.nea.gov.sg/media/news/news/index/nea-and-shell-to-jointly-explore-new-chemical-recycling-value-chain-to-turn-plastic-waste-into-chemicals

Beverage Containers Return Scheme

NEA will be introducing the legislative framework for a Beverage Containers Return Scheme as the first phase of the EPR approach for packaging waste (see Goal 1, Future Policies). The scheme will aggregate post-consumer plastic waste, such as PET plastic beverage bottles, and provide a steady supply of feedstock for recycling. This will drive demand for recycling and create a viable industry in Singapore to turn our post-consumer plastic waste into valuable resources. The second phase will then cover other types of packaging.

Is this Goal relevant for your country? ☒ Highly ☐ Partially ☐ Not at all

I. 3R Goals in Urban/Industrial Areas (3Rs in municipal solid waste)	
Goal 4	Build **sustainable cities /green cities** by encouraging "**zero waste**" through sound policies, strategies, institutional mechanisms, and multi - stakeholder partnerships (giving specific importance to private sector involvement) with a primary goal of **waste minimization**

Q-1 What specific waste management policies and programmes are introduced to encourage private sector participation in municipal waste management?

Some of the policies and voluntary initiatives to encourage private sector participation include:

- Mandatory waste reporting for large commercial & industrial premises to report waste data and submit waste reduction plans (mentioned in Goal 1, Q-1). The policy is intended to help build greater awareness among these operators of the potential for improving waste management systems at their premises.

  More information may be found here:
  https://www.nea.gov.sg/our-services/waste-management/mandatory-waste-reporting

- The Packaging Partnership Programme (PPP) (mentioned in Goal 1, Q-1) is a joint capability development programme that will support companies in fulfilling their new obligations under the Mandatory Packaging Reporting framework from 2021 as well as enable the exchange of best practices in sustainable packaging waste management.

Q-2 What are the major waste management areas that have strong involvement of private and business sector? (Please check appropriate boxes and add other areas if not listed below)

☒ waste collection
☒ resource recovery
☒ waste recycling
☒ waste to energy, composting, etc.
☒ PPP projects in waste sector

Challenges (policy/ institutional/ technological/ financial) faced in implementation:

Similar to Goal 3

Examples of pilot projects, master plans and/or policies developed or under development – include websites where relevant

-

Important policies/programmes/projects/master plans the government plans to undertake within next five years (2016~2021)

NEA introduced the EPR for e-waste and mandatory reporting requirements for packaging data and 3R plans for packaging in 2021.

Is this Goal relevant for your country? ☒ Highly ☐ Partially ☐ Not at all

I. 3R Goals in Urban/Industrial Areas (3Rs in Industrial waste)	
Goal 5	Encourage the **private sector**, including small-and medium-sized enterprises (SMEs) to implement measures to increase **resource efficiency and productivity**, creation of decent work and to improve environmentally-friendly practices through applying environmental standards, clean technologies, and cleaner production.

Q-1 What are the major clean technology related policies aiming to increase energy and resource efficiency of SMEs?

Industrial / manufacturing SMEs can tap on the following resources:

Incentives

- The Energy Efficiency Fund (E2F) supports businesses with industrial facilities in their efforts to improve energy efficiency. The fund consists of five grant schemes to support various energy efficiency and low carbon initiatives.

- The Singapore Certified Energy Manager (SCEM) Training Grant is a co-funding scheme to develop local expertise and capability in professional energy management.

More information may be found here:
https://www.nea.gov.sg/our-services/climate-change-energy-efficiency/energy-efficiency/industrial-sector

Programmes

- The Energy Efficiency National Partnership (EENP) is an industry-focused voluntary partnership programme for companies that wish to be more energy efficient, thereby enhancing their long-term business competitiveness and reducing their carbon footprint. It supports companies in their energy efficiency efforts through learning network activities, provision of energy efficiency-related resources, incentives and recognition.

  More information may be found here:
  https://www.nea.gov.sg/our-services/climate-change-energy-efficiency/energy-efficiency/industrial-sector/energy-efficiency-national-partnership

- The Energy Services Companies (ESCO) Accreditation Scheme enhances the professionalism and quality of services offered by energy services companies (ESCOs), which provide energy efficient technology and services including financing, design, implementation and management of projects.

More information may be found here:
https://www.nea.gov.sg/programmes-grants/schemes/esco-accreditation

NEA also administers the 3R Fund, a co-funding scheme to encourage organisations to undertake waste minimisation and recycling projects. Under this scheme, funding is provided up to 80% of the qualifying costs, subject to a cap of $1 million per project.

More information may be found here:
https://www.nea.gov.sg/programmes-grants/grants-and-awards/3r-fund

I. 3R Goals in Urban/Industrial Areas (3Rs in Industrial waste)	
Goal 5	Encourage the **private sector**, including small-and medium-sized enterprises (SMEs) to implement measures to increase **resource efficiency and productivity**, creation of decent work and to improve environmentally-friendly practices through applying environmental standards, clean technologies, and cleaner production.

Q-2 What are the capacity building programmes currently in place to build the technical capacity of SMEs in 3R areas?

Enterprise Singapore is an agency under the Ministry of Trade and Industry (MTI) and is responsible for championing enterprise development. It works with Singapore enterprises to build capabilities, innovate and internationalise. It provides financial assistance in the form of grants, loans, insurance, tax incentives and investments, as well as non-financial assistance such as business toolkits, talent attraction and development, networking opportunities, export guides, free trade agreements and new market entry support.

More information may be found here:
https://www.enterprisesg.gov.sg/financial-assistance;https://www.enterprisesg.gov.sg/non-financial-assistance.

The Packaging Partnership Programme (PPP) (mentioned in Goal 1, Q-1) is a joint capability development programme that will support companies in fulfilling their new obligations under the Mandatory Packaging Reporting framework from 2021 as well as enable the exchange of best practices in sustainable packaging waste management.

Challenges (policy/ institutional/ technological/ financial) faced in implementation:

It is challenging to garner industry participation as programmes like PPP and EENP are voluntary schemes to encourage adoption of best practices. Furthermore, it is crucial to sustain these voluntary programmes in the long run.

Examples of pilot projects, master plans and/or policies developed or under development – include websites where relevant

-

Important policies/programmes/projects/master plans the government plans to undertake within next five years (2016~2021)

-

Is this Goal relevant for your country? ☒ Highly ☐ Partially ☐ Not at all

I. 3R Goals in Urban/Industrial Areas (3Rs in Industrial waste)

Goal 6	Promote the **greening of the value chain** by encouraging industries and associated suppliers and vendors in socially responsible and inclusive ways.

Q-1 What percent of companies and industries have introduced green accounting and voluntary environmental performance evaluation (Ref: ISO 14000)?

☐ Very High (> 90%)
☐ High (>70%)
☐ Average (50-~70%)
☐ Low or not satisfactory (< 50%)
☐ None

No data available.

Q-2 What percent of companies and industries have introduced social accounting (Ref: SA 8000) in consultation with their workers?

☐ Very High (> 90%)
☐ High (>70%)
☐ Average (50-~70%)
☐ Low or not satisfactory (< 50%)
☐ None

No data available.

Q 3 Does government have a programme for promoting greening of the value chain? What specific policies, programmes and incentives are introduced to promote greening of value chain?

Packaging Partnership Programme (mentioned in Goal 1, Q-1)

To support companies in their journey towards adopting sustainable packaging waste management practices, the Singapore Manufacturing Federation has partnered NEA to introduce a new industry-led programme called the Packaging Partnership Programme (PPP).

The PPP is a joint capability development programme aimed to build industry capability in sustainable packaging waste management, and support companies in fulfilling current and future packaging regulatory requirements, including the Mandatory Packaging Reporting (MPR).

More information on the PPP may be found here:
http://packaging-partnership.org.sg

SGX Sustainability Reporting

The Singapore Exchange introduced mandatory sustainability reporting in 2016. Singapore-listed companies are required to publish a sustainability report yearly, covering five primary components: material ESG (environmental, social, governance) factors; policies, practices and performance; targets; sustainability reporting framework; and their Board statement.

Challenges (policy/ institutional/ technological/ financial) faced in implementation:

I. 3R Goals in Urban/Industrial Areas (3Rs in Industrial waste)	
Goal 6	Promote the **greening of the value chain** by encouraging industries and associated suppliers and vendors in socially responsible and inclusive ways.
Similar to Goal 5, it is challenging to garner industry participation for voluntary programmes like PPP.	
Examples of pilot projects, master plans and/or policies developed or under development – include websites where relevant -	
Important policies/programmes/projects/master plans the government plans to undertake within next five years (2016~2021) -	
Is this Goal relevant for your country? ☒ Highly ☐ Partially ☐ Not at all	

I. 3R Goals in Urban/Industrial Areas (3Rs in Industrial waste)	
Goal 7	Promote **industrial symbiosis** (i.e., recycling of waste from one industry as a resource for another), by providing relevant incentives and support.

Q-1 Does your government have policies and programmes promoting industrial symbiosis in industrial parks or zones? What specific policies, programmes and incentives are introduced to promote industrial symbiosis?

Jurong Town Corporation (JTC) is the lead agency in Singapore to spearhead the planning, promotion and development of a dynamic industrial landscape. It adopts environmentally sustainable practices in the planning, design, construction and management of industry spaces and innovation districts, and has developed an Environmental Sustainability Framework that is applied across all its properties to further reduce energy and water usage, shrink its emissions footprint, and increase its use of clean energy.

More information may be found here:
https://www.jtc.gov.sg/our-sustainability-journey/Pages/default.aspx;

Other initiatives include JTC's Multi-Storey Recycling Facility (MSRF) as detailed below.

Q-2 How many eco-industrial parks or zones or the like, which is supported by the government, are there in the country?

-

Challenges (policy/ institutional/ technological/ financial) faced in implementation:
-

Examples of pilot projects, master plans and/or policies developed or under development – include websites where relevant
-

Important policies/programmes/projects/master plans the government plans to undertake within next five years (2016~2021)

Integrated Waste Management Facility (IWMF)

The IWMF is an integral part of NEA's plan to help Singapore meet its waste management needs and achieve long term environmental sustainability. To be completed in Phases with the first phase slated for completion by 2025, the IWMF will incorporate several key solid waste treatment processes to handle multiple waste streams. These waste streams will include municipal solid waste, household recyclables collected under the National Recycling Programme, source-segregated food waste and dewatered sludge from PUB's Tuas Water Reclamation Plant (TWRP). The IWMF will be co-located with PUB's TWRP to form the Tuas Nexus. This will derive various engineering synergies to reap the benefits of a water-energy-waste nexus.

Some key Tuas Nexus synergies are as follows:

- Co-digestion of treated food waste from IWMF with used water sludge at TWRP to increase biogas yield. Biogas will be utilised at IWMF to increase overall plant thermal efficiency and increase electricity production.
- Incineration of dewatered sludge from TWRP at IWMF's sludge incineration facility to

I. 3R Goals in Urban/Industrial Areas (3Rs in Industrial waste)	
Goal 7	Promote **industrial symbiosis** (i.e., recycling of waste from one industry as a resource for another), by providing relevant incentives and support.

produce steam for TWRP's thermal hydrolysis and greasy waste treatment processes; and

- Utilisation of treated water from TWRP for IWMF's processes

More information may be found here:
https://www.straitstimes.com/singapore/environment/2-green-plants-to-improve-waste-treatment-efficiency

Multi-Storey Recycling Facility (MSRF)

The Multi-Storey Recycling Facility (MSRF), now called Kranji Green and developed by JTC, will be Singapore's first multi-user, high-rise facility that houses waste recycling companies. It was conceptualised together with NEA and the Waste Management & Recycling Association of Singapore (WMRAS), a trade association representing over 150 waste management and recycling companies in Singapore.

Kranji Green is located within a larger industrial hub called Kranji Built Environment Hub, which also supports metal, machinery and timber companies. By clustering companies along the same built environment value chain in one location, the objectives are to facilitate industrial symbiosis and reduce business costs for companies. For example, metal fabrication companies can easily sell their metal waste to waste management companies in the same location for recycling. When companies move to Kranji Built Environment Hub, technology partners will also be introduced to companies to help them adopt new technologies to transform their operations.

More information may be found here:
www.jtc.gov.sg/find-space/kranji-green

Is this Goal relevant for your country? ☐ Highly ☒ Partially ☐ Not at all

I. 3R Goals in Urban/Industrial Areas (3Rs in Industrial waste)	
Goal 8	Build **local capacity** of both current and future practitioners, to enable the private sector (including SMEs) to obtain the necessary knowledge and technical skills to foster green industry and create decent, productive work.

Q-1 How many dedicated training facilities or centers are there to cater the needs of SMEs and practitioners in the areas of cleaner production, resource efficiency and environment-friendly technologies, etc.?

Singapore Environment Institute

The Singapore Environment Institute (SEI) is the training and knowledge division of NEA. Besides organising training programmes for the transfer of knowledge within NEA, it is responsible for delivering in-house technical training and building of environmental knowledge among staff to build a relevant, resourceful and resilient NEA workforce.

SEI also supports capability building and Continuing Education and Training (CET) needs within the local industry programmes with institutes of higher learning. In addition, the Institute actively participates in capacity building of identified countries via training and workshops catering to selected government officials.

More information may be found here: https://www.nea.gov.sg/programmes-grants/courses/sei

Sustainable Manufacturing Centre

The Sustainable Manufacturing Centre (SMC) was set up under the Singapore Institute of Manufacturing Technology (SIMTech) to develop and implement sustainable manufacturing technologies that minimise emissions, wastes and toxicity, promote the recycling and reuse of resources and strengthen the global competitiveness of Singapore's manufacturing industry. The SMC also develops and conducts training courses on technical capabilities for sustainability improvement.

More information may be found here:
https://www.a-star.edu.sg/simtech

Singapore Sustainability Academy

The Singapore Sustainability Academy (SSA) was launched in August 2016 to promote a low-carbon economy, resource efficiency and sustainability practices among businesses and the community. The SSA offers training programmes, and promotes collaboration between businesses, academics and young people in the area of improving sustainability efforts and standards in Singapore.

More information may be found here:
https://www.straitstimes.com/singapore/new-academy-to-drive-sustainability-in-singapore-launched;
https://www.eco-business.com/press-releases/cdl-and-seas-launch-singapore-sustainability-academy/.

Q-2 Please provide an indicative figure on annual government (US $) expenditure on building technical capacity of SMEs and practitioners in the areas of cleaner production, resource

I. 3R Goals in Urban/Industrial Areas (3Rs in Industrial waste)	
Goal 8	Build **local capacity** of both current and future practitioners, to enable the private sector (including SMEs) to obtain the necessary knowledge and technical skills to foster green industry and create decent, productive work.

efficiency and environment-friendly technologies, etc.?

No data available

Challenges (policy/ institutional/ technological/ financial) faced in implementation:

-

Examples of pilot projects, master plans and/or policies developed or under development – include websites where relevant

-

Important policies/programmes/projects/master plans the government plans to undertake within next five years (2016~2021)

NEA is leading a Closing the Waste Loop (CTWL) research funding initiative to encourage collaborations with institutes of higher learning, research institutes and private sector partners, to develop technologies and solutions to tackle challenges posed by increasing waste generation, scarcity of resources and land constraints for waste management. The initiative will boost Singapore's research and development (R&D) capabilities in developing solutions to extract value and resources from key waste streams including plastics, food, and electrical and electronic products.

More information may be found here:
https://www.nea.gov.sg/programmes-grants/grants-and-awards/closing-the-waste-loop-initiative

Is this Goal relevant for your country? ☒ Highly ☐ Partially ☐ Not at all

I. 3R Goals in Urban/Industrial Areas (3Rs in Industrial waste)	
Goal 9	Develop proper **classification and inventory of hazardous waste** as a prerequisite towards sound management of such waste.

Q-1 Is there a systematic classification of hazardous waste? If so, please attach.

☒Yes ☐ No

The controlled toxic industrial waste are listed in the Schedule of the Environmental Public Health (Toxic Industrial Waste) Regulations and the list may be found here: *https://sso.agc.gov.sg/SL/EPHA1987-RG11*

Q-2 What specific rules and regulations are introduced to separate, store, treat, transportation and disposal of hazardous waste?

The collection, transportation, treatment and disposal of toxic industrial waste in Singapore are regulated under the Environmental Public Health (Toxic Industrial Waste) Regulations.

Challenges (policy/ institutional/ technological/ financial) faced in implementation:

-

Examples of pilot projects, master plans and/or policies developed or under development – include websites where relevant

In August 2016, Singapore implemented the initiative to restrict the use of six hazardous substances in electrical and electronic equipment (EEE). The initiative is adapted from EU's Restriction of Hazardous Substances (RoHS) regulation and took effect on 1 June 2017 to restrict the following substances in several household EEE :

- cadmium and its compounds;
- hexavalent chromium;
- lead and its compounds;
- mercury and its compounds;
- polybrominated biphenyls; and
- polybrominated diphenyl ethers

The purpose of the initiative increases the potential recyclability of incineration ash by reducing the presence of heavy metals in the waste stream. It also helps to divert the incineration ash from disposal at the Semakau Landfill thereby extending its lifespan.

More information can be found here:
https://www.nea.gov.sg/our-services/pollution-control/chemical-safety/hazardous-substances

Important policies/programmes/projects/master plans the government plans to undertake within next five years (2016~2021)

Is this Goal relevant for your country? ☒ Highly ☐ Partially ☐ Not at all

II. 3R Goals in Rural Areas

Goal 10	**Reduce losses in the overall food supply chain** (production, post harvesting and storage, processing and packaging, distribution), leading to reduction of waste while increasing the quantity and improving the quality of products reaching consumers.

Q-1 What specific policies, rules and regulations, including awareness programmes, are introduced to minimize food or crop waste?

The food waste minimisation guidebooks for food manufacturing establishments, food retail establishments and supermarkets (refer to Goal 2, Q-1) provide guidance to these businesses on reducing food waste in their business operations, as well as promote food donation and redistribution.

To raise awareness of consumers, collaterals such as posters, magnets and wobblers, and a TV commercial were produced for the Food Waste Reduction Outreach programme. A Love Your Food guidebook was also developed to give tips on how to reduce food wastage at home and when dining out.

Q-2 Is there any continuing education services or awareness programmes for the farmers or agricultural marketing associations on reduction of crop wastes for increased food security?

-

Q-3 What is the average wastage of crops or agricultural produce between farms to consumers, if there is a study in your country?

☐ Very High (> 20~ 30%)
☐ High (10~20%)
☐ Medium (5~10%)
☐ Low (< 5%)
☐ Negligible (<1%)
No data available

Challenges (policy/ institutional/ technological/ financial) faced in implementation:

It is challenging to implement measures to reduce food waste in upstream production and distribution as more than 90% of food consumed in Singapore is imported. In addition, there is a lack of visibility on the amount of food waste generated by upstream players in the supply chain before the food eventually reaches Singapore.

Examples of pilot projects, master plans and/or policies developed or under development – include websites where relevant

-

Important policies/programmes/projects/master plans the government plans to undertake within next five years (2016~2021)

-

Is this Goal relevant for your country? ☐ Highly ☒ Partially ☐ Not at all

II. 3R Goals in Rural Areas	
Goal 11	Promote full scale **use of agricultural biomass waste and livestock waste** through reuse and/or recycle measures as appropriate, to achieve a number of co‐benefits including GHG emission reduction, energy security, sustainable livelihoods in rural areas and poverty reduction, among others.

Q-1 How much amount of – (a) agricultural biomass waste and (b) livestock waste are grossly generated per annum?

No data available. Singapore is not a significant agricultural producer.

Q-2 How are most of the agricultural biomass wastes utilized or treated? (Please check all appropriate boxes)

☐ as secondary raw material input (for paper, bioplastic, furniture, etc.)
☒biogas/electricity generation
☒composts/fertilizers
☐ mostly left unutilized or open dumped
☐ mostly open burned

Q-3 What specific policies, guidelines, and technologies are introduced for efficient utilization of agricultural biomass waste and livestock waste as a secondary material inputs towards full scale economic benefits? Relevant websites could be shared for additional information.
-

Challenges (policy/ institutional/ technological/ financial) faced in implementation:
-

Examples of pilot projects, master plans and/or policies developed or under development – include websites where relevant
-

Important policies/programmes/projects/master plans the government plans to undertake within next five years (2016~2021)
-

Is this Goal relevant for your country? ☐ Highly ☐ Partially ☒ Not at all

III. 3R Goals for New and Emerging Wastes

Goal 12	Strengthen regional, national, and local efforts to address the issue of **waste, in particular plastics** in the marine and coastal environment.

Q-1 What specific policies and regulations are in place to address the issue of plastic wastes in coastal and marine environment?

The Prevention of Pollution of the Sea Act and its subsidiary legislation aim to prevent sea pollution, whether originating from land or from ships. In particular, the Prevention of Pollution of the Sea (Garbage) Regulations prohibit the discharge into the sea of all plastics, including but not limited to synthetic ropes, synthetic fishing nets, plastic garbage bags and incinerator ashes from plastic products.

More information may be found here:
https://www.mpa.gov.sg/web/portal/home/port-of-singapore/maritime-legislation-of-singapore/prevention-of-pollution-of%20the-sea-act

The EPHA and its subsidiary legislation aim to deter littering in public places. Our integrated solid waste management and collection system also minimises waste at the source and ensure proper waste recycling and disposal which helps prevent waste from being washed into waterways and oceans.

More information may be found here:
https://sso.agc.gov.sg/Act/EPHA1987

Q-2 What extent issue of plastic waste is considered in integrated coastal zone management (ICZM)? *(Please check the appropriate box)*

☐ Very much ☒ Somehow ☐ Not at all

Q-3 Please provide a list of centre of excellences or dedicated scientific and research programmes established to address the impacts of micro-plastic participles (<5 mm) on coastal and marine species? If yes, please provide relevant websites.

-

Challenges (policy/ institutional/ technological/ financial) faced in implementation:

-

Examples of pilot projects, master plans and/or policies developed or under development – include websites where relevant

-

Important policies/programmes/projects/master plans the government plans to undertake within next five years (2016~2021)

-

Is this Goal relevant for your country? ☐ Highly ☒ Partially ☐ Not at all

III. 3R Goals for New and Emerging Wastes

Goal 13	Ensure **environmentally-sound management of e-waste** at all stages, including collection, storage, transportation, recovery, recycling, treatment, and disposal with appropriate consideration for working conditions, including **health and safety aspects** of those involved.

Q-1 How do people usually recycle their e-waste (waste electrical and electronic equipment)?
(Please check the appropriate box in order of priority by filling in numbers like 1, 2, 3, 4,….etc., for example 1 => Highest priority)

Check if applicable	Number in priority order	
✓	4	Take to recycling center / resource recovery facilities
		Take to landfill
✓	3	Take to the retailer
✓	2	Take to local charity for re-use
✓	1	Take to second-hand shop for re-use
		Ship back to the manufacturer
		Ship back to the manufacturer
		Recycle in another country
		Do not know how people dispose

Q-2 What specific policies and regulations are in place to ensure health and safety aspects of those involved in e-waste management (handling/sorting/resource recovery/recycling)?

NEA adopts an integrated approach in the planning and control of new developments, including e-waste recycling facilities. This is to ensure that environmental considerations and factors are incorporated into land use planning, development control and building plan stages, so as to minimise pollution and mitigate its impact on surrounding land use to achieve a quality environment. A proposed factory will only be allowed to be set up if it is sited in an appropriate industrial estate, compatible with the surrounding land uses and can comply with the pollution control requirements.

Environmental Public Health (Toxic Industrial Waste) regulations mandate proper collection and treatment by licensed TIWCs and generators of spent refrigerants. The Resource Sustainability (E-waste Recyclers) regulations also mandates proper recovery of refrigerants by licensed e-waste recyclers. Hence, the removal of the compressor from the refrigerator without proper refrigerant extraction machine vents refrigerant into the atmosphere, resulting in HFC emissions, will be forfeited.

More information may be found here:
https://www.nea.gov.sg/our-services/development-control/overview

All factories including recycling facilities located in Singapore are required to comply with the Ministry of Manpower's Workplace Safety and Health Act and its regulations.

More information may be found here:
https://www.mom.gov.sg/workplace-safety-and-health; https://www.mom.gov.sg/workplace-safety-and-health/workplace-safety-and-health-act

All facilities that receive, store and process e-waste will have to be licensed by NEA under the General Waste Disposal Facility (GWDF) licensing regime.

III. 3R Goals for New and Emerging Wastes

Goal 13 Ensure **environmentally-sound management of e-waste** at all stages, including collection, storage, transportation, recovery, recycling, treatment, and disposal with appropriate consideration for working conditions, including **health and safety aspects** of those involved.

Q-3 How much amount of e-waste is generated and recycled per year?

An estimated 60,000 tonnes of e-waste is generated per year. A consumer survey showed that 6% (by weight) of e-waste from consumers are deposited into e-waste recycling bins before the Extended Producer Responsibility (EPR) Scheme for E-waste which was implemented on 1 July 2021.

More information may be found here:
https://www.nea.gov.sg/media/news/news/index/stakeholders-sharing-responsibility-is-key-to-building-a-sustainable-e-waste-management-system-nea-study

Type of e-waste	Estimated total volume generated (ton/year)	% of collected by permitted recycler	% of volume recycled in collected
Television	No data available		
Computer			
Mobile phone			
Refrigerators			
Washing machines			
Air conditioners			
Others…			

Challenges (policy/ institutional/ technological/ financial) faced in implementation:

-

Examples of pilot projects, master plans and/or policies developed or under development – include websites where relevant

NEA has been working closely with industry partners & communities to encourage e-waste recycling through voluntary programmes led by industry partners. NEA has also launched the national voluntary partnership for e-waste recycling with interested stakeholders to bring together and enhance the various programmes under one umbrella.

More information may be found here:
https://www.nea.gov.sg/programmes-grants/schemes/national-voluntary-partnership-for-e-waste-recycling;
https://www.nea.gov.sg/our-services/waste-management/3r-programmes-and-resources/e-waste-management/where-to-recycle-e-waste

Important policies/programmes/projects/master plans the government plans to undertake within next five years (2016~2021)

Extended Producer Responsibility (EPR) Scheme for E-waste was implemented on 1 July 2021. The producers of the electrical and electronic equipment (EEE) producers were made responsible for the end-of-life EEE that they supplied to the market in Singapore. The EPR scheme is implemented through the Resource Sustainability Act (RSA) which was enacted on 4

III. 3R Goals for New and Emerging Wastes	
Goal 13	Ensure **environmentally-sound management of e-waste** at all stages, including collection, storage, transportation, recovery, recycling, treatment, and disposal with appropriate consideration for working conditions, including **health and safety aspects** of those involved.

Oct 2019. NEA will continue to review the policies and programmes to meet the future needs.

More information may be found here:
https://www.nea.gov.sg/media/news/news/index/nea-to-implement-e-waste-management-system-for-singapore-by-2021

Is this Goal relevant for your country? ☒ Highly ☐ Partially ☐ Not at all

III. 3R Goals for New and Emerging Wastes	
Goal 14	Effective enforcement of established mechanisms for preventing illegal and inappropriate export and import of waste, including transit trade, especially of hazardous waste and e-waste.

Q-1 What specific policies and regulations are introduced to prevent illegal import and export of e-waste?

Singapore acceded to the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (Basel Convention) in the control of export, import and transit of hazardous wastes on 2 January 1996. On 16 March 1998, Singapore enacted the Hazardous Waste (Control of Export, Import and Transit) Act and its Regulations to regulate the control of export, import and transit of hazardous wastes in accordance with the principles and provisions of the Basel Convention.

Under the Hazardous Waste (Control of Export, Import and Transit) Act and its Regulations, any person who wishes to export, import or transit hazardous wastes shall obtain a permit from the NEA. The NEA adopts the Prior Informed Consent (PIC) procedure of the Basel Convention in granting any permit for the export, import or transit of hazardous wastes controlled under the Convention.

More information may be found here:
https://www.nea.gov.sg/corporate-functions/resources/legislation-international-law/multilateral-environmental-agreements/chemical-safety/basel-convention/basel-convention-on-the-control-of-transboundary-movements-of-hazardous-wastes-and-their-disposal

Q-2 Do you have required number of well-trained custom or other officials (for airport. sea-port, land border control, etc.) to track illegal export and import of e-waste?

☒ Yes ☐ No

Challenges (policy/ institutional/ technological/ financial) faced in implementation:

-

Examples of pilot projects, master plans and/or policies developed or under development – include websites where relevant

-

Important policies/programmes/projects/master plans the government plans to undertake

III. 3R Goals for New and Emerging Wastes	
Goal 14	Effective enforcement of established mechanisms for preventing illegal and inappropriate export and import of waste, including transit trade, especially of hazardous waste and e-waste.
within next five years (2016~2021) -	
Is this Goal relevant for your country? ☒ Highly ☐ Partially ☐ Not at all	

III. 3R Goals for New and Emerging Wastes

Goal 15	Progressive implementation of "**extended producer responsibility (EPR)**" by encouraging producers, importers, and retailers and other relevant stakeholders to fulfill their responsibilities for collecting, recycling, and disposal of new and emerging waste streams, in particular e-waste.

Q-1 What specific Extended Product Responsibility (EPR) policies are enacted or introduced? (If there is none, then skip Q-2 below)

NEA introduced EPR concept in the management of e-waste in 2021.

Q-2 Please provide a list of products and product groups targeted by EPR nationally?

Product Category	**Product Type**
ICT equipment	Printers
	Desktop Computers and monitors / Laptops
	Mobile phones / Tablets
	Routers / Modems / Set-top boxes / Servers
Large appliances	Refrigerators
	Air-conditioners
	Washing machines
	Dryers
	Televisions
	Electric Mobility Devices
Batteries	Portable Batteries
	Industrial Batteries
	Electric/ Vehicle Batteries
Lamps	All types
Solar Photovoltaic (PV) panels	All types

Challenges (policy/ institutional/ technological/ financial) faced in implementation:

Extending coverage for EPR framework to e-commerce platforms. In addition, COVID-19 has brought in cost concerns from producers of regulated consumer product who bear the financial responsibility of the PRS.

Examples of pilot projects, master plans and/or policies developed or under development – include websites where relevant

-

Important policies/programmes/projects/master plans the government plans to undertake within next five years (2016~2021)

NEA introduced regulatory measures to ensure that e-waste is managed effectively and efficiently

III. 3R Goals for New and Emerging Wastes	
Goal 15	Progressive implementation of "**extended producer responsibility (EPR)**" by encouraging producers, importers, and retailers and other relevant stakeholders to fulfill their responsibilities for collecting, recycling, and disposal of new and emerging waste streams, in particular e-waste.

in Singapore. This will entail the assignment of responsibilities to key stakeholders in the e-waste value chain through EPR (mentioned in Goal 3, Q-2).

More information may be found here:
https://www.nea.gov.sg/media/news/news/index/nea-to-implement-e-waste-management-system-for-singapore-by-2021

NEA will also be introducing a Beverage Containers Return Scheme as the first phase of an EPR approach for packaging waste management. The next phase will then cover other types of packaging.

Is this Goal relevant for your country? ☒ Highly ☐ Partially ☐ Not at all

III. 3R Goals for New and Emerging Wastes

Goal 16 **Promote the 3R concept** in health-care waste management.

Q-1 What specific policies and regulations are in place for healthcare waste management?

Biohazardous waste from hospitals, polyclinics and healthcare institutions are classified as toxic industrial waste under the Environmental Public Health (Toxic Industrial Waste) Regulations. Biohazardous waste are required under the regulations to be collected and disposed of by licensed toxic industrial waste collectors.

More information may be found here:
https://www.nea.gov.sg/our-services/pollution-control/hazardous-waste/toxic-waste-control

Q-2 What is the total annual government expenditure towards healthcare waste management (US$ per year)?

-

Q-3 List the agencies or authorities responsible for healthcare waste management.

Ministry of Health (MOH) and NEA

Q-4 What is the common practice for disposal of healthcare wastes?

(Please check the appropriate box and add if any other practice followed)

☐ open dumping (untreated)
☐ open burning (untreated)
☐ ordinary landfilling (untreated)
☐ sanitary landfilling (treated)
☐ Low cost small scale incineration (do not meet air emission standards)
☒Highly controlled air incineration (dedicated/modern medical waste incinerators)
☐ Other methods (please specify names:)

Challenges (policy/ institutional/ technological/ financial) faced in implementation:

-

Examples of pilot projects, master plans and/or policies developed or under development – include websites where relevant

-

Important policies/programmes/projects/master plans the government plans to undertake within next five years (2016~2021)

-

Is this Goal relevant for your country? ☒ Highly ☐ Partially ☐ Not at all

IV. 3R Goals for Cross-cutting Issues

Goal 17 Improve **resource efficiency and resource productivity** by greening jobs nation - wide in all economic and development sectors.

Q-1 What specific policies and guidelines are introduced for product standard (towards quality/durability, environment/eco-friendliness, labour standard)?

NEA launched the Mandatory Energy Labelling Scheme (MELS), starting with household air-conditioners and refrigerators in 2008, to help consumers compare the energy efficiency of energy consuming products, thereby empowering them to make more informed purchasing decisions. The scheme has since been extended to clothes dryers, televisions and lamps. To raise the average efficiency of appliances in the market, household refrigerators, air conditioners, clothes dryers, and lamps supplied in Singapore must also meet the Minimum Energy Performance Standards (MEPS). This helps to protect consumers from being locked into the high energy costs of operating inefficient appliances. MEPS and MELS requirements are regularly reviewed to ensure that it is kept pace with developments in appliances' energy efficiency and MELS provides adequate differentiation of appliance models to reflects energy efficiency improvements in the market.

More information may be found here:
https://www.nea.gov.sg/els

The Singapore Green Building Council (SGBC) launched the Singapore Green Building Product (SGBP) certification scheme in 2010 to raise the environmental standards of building products.

More information may be found here:
https://www.sgbc.sg/sgbc-certifications

The Singapore Green Labelling Scheme (SGLS), administered by the Singapore Environment Council (SEC), was launched to endorse industrial and consumer products that have less undesirable effects on the environment.

More information may be found here:
https://www.sgls.sec.org.sg

Q-2 What specific energy efficiency schemes are introduced for production, manufacturing and service sector?

The Energy Efficiency Promotion Centre (EEPC) serves as a convenient one-stop centre for providing industrial energy efficiency related resources, such as assistance on the mandatory energy management requirements under the Energy Conservation Act, and incentives and programmes to support companies in their energy efficiency efforts.

More information may be found here:
https://www.nea.gov.sg/our-services/climate-change-energy-efficiency/energy-efficiency/industrial-sector

The Energy Efficiency Technology Centre (EETC) was launched in October 2019 by the Singapore Institute of Technology (SIT) in collaboration with NEA. The EETC helps to build up energy efficiency (EE) capabilities in the industry by providing affordable energy consultancy services to industrial SMEs; training a pipeline of engineering students in industrial EE; and upskilling existing engineers or EE practitioners.

IV. 3R Goals for Cross-cutting Issues

Goal 17 Improve **resource efficiency and resource productivity** by greening jobs nation - wide in all economic and development sectors.

More information may be found here:
https://www.singaporetech.edu.sg/innovate/energy-efficiency-technology-centre

Q-3 What specific policies are introduced to create green jobs in product and waste sector?

Job opportunities will be created through (i) the Singapore Green Plan 2030, a whole-of-nation movement that will strengthen Singapore's economic, climate and resource resilience, improve the living environment of Singaporeans and bring new business and job opportunities; (ii) strategies and initiatives set out in the Zero Waste Masterplan to meet Singapore's aspiration to work towards becoming a Zero Waste Nation, and (iii) Singapore's effort to transform the industry through the Environmental Services Industry Transformation Map.

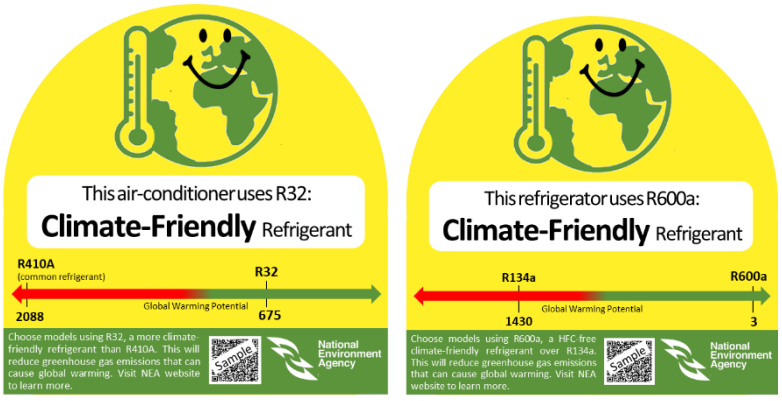
Challenges (policy/ institutional/ technological/ financial) faced in implementation:

-

Examples of pilot projects, master plans and/or policies developed or under development – include websites where relevant

Climate-friendly Label for household refrigerators and air-conditioners

The voluntary Climate-friendly Label for household refrigerators and air-conditioners was launched in March 2020 to help consumers select air-conditioner and refrigerator models that use climate-friendly refrigerants.



The voluntary labels for air-conditioners (left) and refrigerators (right) using climate-friendly refrigerant.

Important policies/programmes/projects/master plans the government plans to undertake within next five years (2016~2021)

Mandatory recovery of refrigerants by licensed e-waste recyclers from 2021

Singapore will be mandating the recovery and reclamation or destruction of spent refrigerants in decommissioned RAC equipment. E-waste recyclers, who take in household air-conditioners and refrigerators for recycling, and certified water-cooled chiller technicians will be required to recover refrigerants from decommissioned RAC equipment. Refrigerant treatment facilities and e-waste recyclers that handle the reclamation and destruction of spent refrigerants will have to obtain a Toxic Industrial Waste Collector (TIWC) licence from NEA.

IV. 3R Goals for Cross-cutting Issues	
Goal 17	Improve **resource efficiency and resource productivity** by greening jobs nation - wide in all economic and development sectors.

Phasing out RAC equipment that use high-GWP refrigerants from Q4 2022

Singapore is planning to progressively phase out RAC equipment that use high-GWP refrigerants. NEA will restrict the supply of the following RAC equipment in Singapore from Q4 2022 as there are climate-friendly alternatives in the market:

- Household air-conditioners that use refrigerants with GWP of more than 750;
- Household refrigerators that use refrigerants with GWP of more than 15; and
- Water-cooled chillers that use refrigerants with GWP of more than 15.

Is this Goal relevant for your country? ☒ Highly ☐ Partially ☐ Not at all

IV. 3R Goals for Cross-cutting Issues

Goal 18 Maximize co-benefits from waste management technologies for local air, water, oceans, and soil pollution and global climate change.

Q-1 Please share how climate mitigation is addressed in waste management policies and programmes for co-benefits?

Singapore ratified the United Nations Framework on Climate Change (UNFCCC) in 1997, acceded to the Kyoto Protocol in 2006, and ratified the Paris Agreement on climate change on 21 Sep 2016. We therefore have to take into consideration our commitments to climate change mitigation in our waste management policies. Singapore's solid waste management strategies aim to reduce greenhouse gas (GHG) emissions from waste disposal through the 3Rs. In land-scarce Singapore, WtE plants offer the best technical waste disposal solution through the reduction of waste volume by 90%, thereby conserving landfill space. At the same time, incineration offers the following climate change mitigation benefits over landfilling:

i) Singapore's WtE plants generate electricity, reducing the amount of fossil fuel used to generate electricity in power plants;
ii) Incineration of waste results in the release of lower amount of methane, which has higher global warming potential than carbon dioxide.

More information may be found here:
https://www.nccs.gov.sg/media/publications/singapores-national-communications-and-biennial-update-reports;
https://www.nccs.gov.sg/singapores-climate-action/waste-and-water/;
https://www.nea.gov.sg/our-services/waste-management/3r-programmes-and-resources/waste-minimisation-and-recycling

Integrated Waste Management Facility (mentioned in Goal 7)

The IWMF will be developed to enable NEA to meet Singapore's waste disposal needs and achieve greater environmental sustainability. The IWMF will consist of a WtE Facility (5,800 tonnes/day), a Material Recovery Facility (250 tonnes/day), a Food Waste Treatment Facility (400 tonnes/day) and a Sludge Incineration Facility (800 tonnes/day). It will be co-located with PUB's TWRP to form the Tuas Nexus to reap the benefits from the water-energy-waste nexus. This will maximise energy and resource recovery while keeping its land use and carbon emissions as well as various other environmental footprints (i.e., clean air emissions and solid residues for landfill) to a minimum.

Challenges (policy/ institutional/ technological/ financial) faced in implementation:
-

Examples of pilot projects, master plans and/or policies developed or under development – include websites where relevant
-

Important policies/programmes/projects/master plans the government plans to undertake within next five years (2016~2021)

Singapore's climate change mitigation plan includes reducing plastics incineration (e.g., through measures to increase the overall waste recycling rate) and improving efficiency of WtE plants.

Is this Goal relevant for your country? ☒ Highly ☐ Partially ☐ Not at all

IV. 3R Goals for Cross−cutting Issues	
Goal 19	Enhance **national and local knowledge base and research network on the 3Rs and resource efficiency**, through facilitating effective and dynamic linkages among all stakeholders, including governments, municipalities, the private sector, and scientific communities.

Q-1 What specific policies are introduced to encourage triangular cooperation between government, scientific & research institutions and private/business sector in 3R areas?

NEA is leading the Closing the Waste Loop (CTWL, mentioned in Goal 8) research funding initiative to encourage collaborations with institutes of higher learning, research institutes and private sector partners, to develop technologies and solutions to tackle challenges posed by increasing waste generation, scarcity of resources and land constraints for waste management.

More information may be found here:
https://www.nea.gov.sg/programmes-grants/grants-and-awards/closing-the-waste-loop-initiative

Q-2 Please share the number and list of dedicated scientific institution, or coordinating centers in the areas of 3Rs (e.g., waste minimization technologies, eco-products, cleaner production, recycling technologies, industrial symbiosis, resource efficiency, etc.)?

-

Challenges (policy/ institutional/ technological/ financial) faced in implementation:

-

Examples of pilot projects, master plans and/or policies developed or under development – include websites where relevant

-

Important policies/programmes/projects/master plans the government plans to undertake within next five years (2016~2021)

-

Is this Goal relevant for your country? ☐ Highly ☒ Partially ☐ Not at all

IV. 3R Goals for Cross−cutting Issues

Goal 20 Strengthen multi-stakeholder partnerships among governments, civil society, and the private sector in raising public awareness and advancing the 3Rs, sustainable consumption and production, and resource efficiency, leading to the behavioural change of the citizens and change in production patterns.

Q-1 Does central government have official dialogue with multi-stakeholders in the process to formulate 3R-related policies and regulations? Which stakeholders are involved in the dialogue?(Please check all applicable)

☒ NGOs
☒ Industrial Association
☒ Local Government
☒ Academic Institution
☒ Others, please add/specify (businesses that are/will be affected, trade associations and chambers of commerce)

Q-2 What is the level of NGOs' involvement in 3R, sustainable production and consumption, resource efficiency related promotional activities? (Please check the appropriate box)

☒ Very high ☐ Moderate ☐ Low ☐ Almost Negligible

Q-3 What is the level of citizens' awareness on beneficial aspects of 3R, sustainable production and consumption and resource efficiency. (Please check the appropriate box)

☐ Very high ☒ Moderate ☐ Low ☐ Almost Negligible

Challenges (policy/ institutional/ technological/ financial) faced in implementation:

-

Examples of pilot projects, master plans and/or policies developed or under development – include websites where relevant

Packaging Partnership Programme (mentioned in Goal 1, Q-1)

To support companies in their journey towards adopting sustainable packaging waste management practices, the Singapore Manufacturing Federation has partnered NEA to introduce a new industry-led programme called the Packaging Partnership Programme (PPP).

The PPP is a joint capability development programme aimed to build industry capability in sustainable packaging waste management, and support companies in fulfilling current and future packaging regulatory requirements, including the Mandatory Packaging Reporting (MPR).

More information on the PPP may be found here:
http://packaging-partnership.org.sg
Energy Efficiency National Partnership

NEA launched an industry-focused Energy Efficiency National Partnership (EENP) programme on 29 April 2010. The EENP is a voluntary partnership programme for companies that wish to be more energy efficient, thereby enhancing their long-term business competitiveness and reducing their carbon footprint. The EENP aims to support companies in their energy efficiency efforts through learning network activities, provision of energy efficiency-related resources, incentives and recognition.

More information may be found here:
https://www.e2singapore.gov.sg/programmes-and-grants/programmes/energy-efficiency-

IV. 3R Goals for Cross−cutting Issues	
Goal 20	Strengthen multi-stakeholder partnerships among governments, civil society, and the private sector in raising public awareness and advancing the 3Rs, sustainable consumption and production, and resource efficiency, leading to the behavioural change of the citizens and change in production patterns.

national-partnership

Citizens' Workgroup for #RecycleRight

Then-MEWR and NEA convened a #RecycleRight Citizens' Workgroup in 2019 consisting of members of the public to co-create solutions to improve the way households recycle. The redesign of the recycling bins was one of the recommendations proposed by the members and the design involves a transparent bin with clear messaging. Following the Workgroup session, MSE and NEA are working with the Citizens' Workgroup members and waste management companies to finalise the design of the transparent bin and the trials to be conducted.

More information can be found here:
https://www.towardszerowaste.gov.sg/citizens_workgroup/

Citizens' Workgroup on Reducing the Excessive Consumption of Disposables

In 2020, NEA convened a Citizens' Workgroup on Reducing the Excessive Consumption of Disposables, where 55 members of the public, industry stakeholders and NGOs were brought together to exchange ideas and consult stakeholders on possible solutions to reduce the consumption of disposables in Singapore. The Workgroup submitted their recommendations in 2021, of which eight were supported by MSE and NEA. MSE and NEA have since been working with the public, companies, and organisations to develop and co-deliver these recommendations.

More information on this initiative can be found at:
https://www.cgs.gov.sg/citizensworkgroup

Important policies/programmes/projects/master plans the government plans to undertake within next five years (2016~2021)

-

Is this Goal relevant for your country? ☒ Highly ☐ Partially ☐ Not at all

IV. 3R Goals for Cross−cutting Issues	
Goal 21	**Integrate the 3Rs** in formal education at primary, secondary, and tertiary levels as well as non-formal education such as community learning and development, in accordance with Education for Sustainable Development.

Q-1 Provide a list of formal programmes that addresses areas of 3R and resource efficiency as part of the academic curriculum?

NEA encourages learning and activities on environmental issues in schools and youth through the following programmes and funding support:

- Environmental Education Advisors engagement
- Uniformed Group Badge Programme
- Youth for Environmental Sustainability Programme
- Environment Fund for Schools and Institutes of Higher Learning

More information may be found here:
https://www.cgs.gov.sg/what-we-do/programmes/youth-for-environmental-sustainability/about-yes

Recycling in schools

Since 2009, all primary and secondary schools as well as junior colleges have implemented recycling programmes. Recycling bins and recyclables collection are provided by the public waste collectors.

To promote 3R practices in schools, NEA released its first 3R Guidebook for Schools in April 2020. The 3R Guidebook aims to help schools assess their current waste management practices and identify opportunities to reduce, reuse and recycle waste materials. Teachers tasked to promote 3R practices in their schools can refer to the Guidebook for the planning and implementation of 3R plans. This guide seeks to provide general concepts and factors for consideration during the planning phase and to develop 3R programmes for schools.

The Ministry of Education's Eco Stewardship Programme

The Eco Stewardship programme in schools is aimed at strengthening the inculcation of informed, responsible, and sustainability-conscious mindsets and habits in the young, building on current environmental efforts in schools. The programme includes enhancing the teaching and learning of sustainability in the curriculum, inculcating the practice of daily habits such as reducing food waste and energy use, and integrating campus sustainability features into learning resources.

More information can be found here: *www.moe.gov.sg/microsites/cos2021/nurturing-environmental-stewards.html*

Q-2 Please provide an overview of the Government policies and programmes to promote community learning and development (non-formal education) on 3R and sustainable waste management.

Clean and Green Singapore (CGS)
Clean and Green Singapore (CGS) is an annual nation-wide campaign organised by NEA and other organisations, for the community. It aims to inspire Singaporeans to care for and protect the living environment by adopting an environmentally-friendly lifestyle, including making energy

IV. 3R Goals for Cross−cutting Issues	
Goal 21	**Integrate the 3Rs** in formal education at primary, secondary, and tertiary levels as well as non-formal education such as community learning and development, in accordance with Education for Sustainable Development.

efficiency & resource conservation practices an integral part of their daily lives.

More information may be found here:
https://www.nea.gov.sg/events-programmes/campaigns/clean-green-singapore

Youths for Environmental Sustainability (YES) Programme
The YES Programme traced its roots to NEA's annual Youth for the Environment Day (YED). From a traditional single-day event celebrating youth environmental contributions, the new, year-long YES Programme provides a more sustained platform to engage youths and develop their environmental leadership capabilities. The YES Programme also supports the Singapore Green Plan 2030's Sustainable Living pillar, by encouraging active green citizenry by youths.
Under the programme, NEA engages the youths through social media and develops a selected group of youths to lead sustainability projects through a structured leadership programme.

Q-3 Please provide a list of academic and research institutions offering PhD programmes in the areas of 3Rs and resource efficiency?

-

Q-4 Please provide a list of management institutions (offering BBA / MBA courses) which have integrated resource efficiency and life cycle assessment (LCA) as part of their curriculum or course development?

-

Challenges (policy/ institutional/ technological/ financial) faced in implementation:
-

Examples of pilot projects, master plans and/or policies developed or under development – include websites where relevant
-

Important policies/programmes/projects/master plans the government plans to undertake within next five years (2016~2021)
-

Is this Goal relevant for your country? ☒ Highly ☐ Partially ☐ Not at all

IV. 3R Goals for Cross-cutting Issues	
Goal 22	**Integrate the 3R concept** in relevant policies and programmes, of key ministries and agencies such as Ministry of Environment, Ministry of Agriculture, Forestry and Fisheries, Ministry of Industry, Ministry of Trade and Commerce, Ministry of Energy, Ministry of Water Resources, Ministry of Transport, Ministry of Health, Ministry of Construction, Ministry of Finance, Ministry of Labour, Ministry of Land and Urban Development, Ministry of Education, and other relevant ministries towards transitioning to a resource-efficient and zero waste society.

Q-1 Please list the name of the Ministries and major Government Agencies which are promoting 3R and resource efficiency as part of their policy, planning and developmental activities at local and national level.

In 2021, Singapore unveiled the Singapore Green Plan 2030, a whole-of-nation movement to advance Singapore's national agenda on sustainable development. It is spearheaded by five ministries – Ministries of Education, National Development, Sustainability and the Environment, Trade and Industry, and Transport, and supported by the Whole of Government. There are five key pillars under the plan:

f) City in Nature: to create a green, liveable and sustainable home for Singaporeans
g) Sustainable Living: to make reducing carbon emissions, keeping our environment clean, and saving resources and energy a way of life in Singapore
h) Energy Reset: to use cleaner energy and increase our energy efficiency to lower our carbon footprint
i) Green Economy: to seek green growth opportunities to create new jobs, transform our industries, and harness sustainability as a competitive advantage; and
j) Resilient Future: to build up Singapore's climate resilience and enhance our food security.

More information can be found at www.greenplan.gov.sg.

Q-2 What type of coordination mechanism are there among ministries and agencies for a resource efficient economic development?

☒ Official regular coordination meeting among ministries and agencies
☐ Official ad-hoc coordination meeting among ministries and agencies
☐ Informal meeting among ministries and agencies
☐ Other coordination mechanisms (please add/specify)

Challenges (policy/ institutional/ technological/ financial) faced in implementation:

-

Examples of pilot projects, master plans and/or policies developed or under development – include websites where relevant

-

Important policies/programmes/projects/master plans the government plans to undertake within next five years (2016~2021)

-

Is this Goal relevant for your country? ☒ Highly ☐ Partially ☐ Not at all

IV. 3R Goals for Cross−cutting Issues	
Goal 23	Promote **green and socially responsible procurement** at all levels, thereby creating and expanding 3R industries and markets for environmentally-friendly goods and products.

Q-1 What specific policies are introduced to promote green and social responsible procurement?

The GreenGov.SG initiative, launched in 2021, is the public sector's new sustainability movement. Under this initiative, public sector agencies are to purchase products that meet high efficiency or sustainability standards. This requirement applies to office equipment/stationary, electrical appliances, water fittings, building materials for interior use, and electric vehicles. Public sector agencies will also factor in companies' sustainability-related policies and practices when evaluating government tenders. Sustainability will be incorporated as a consideration in government agencies' procurement decision.

More information may be found here:
https://www.nea.gov.sg/our-services/climate-change-energy-efficiency/energy-efficiency/public-sector

Q-2 Please provide details of eco-labelling schemes of your country.

- **Mandatory Energy Labeling Scheme (MELS)** help consumers compare the energy efficiency of energy consuming products, thereby empowering them to make more informed purchasing decisions. The scheme covers air-conditioners, refrigerators, clothes dryers, televisions and lamps.

  More information may be found here:
  https://www.nea.gov.sg/els

- **BCA Green Mark** to promote sustainability in the built environment and raise environmental awareness among developers, designers and builders when they start project conceptualisation and design, as well as during construction.

  More information may be found here:
  https://www1.bca.gov.sg/buildsg/sustainability/green-mark-buildings

- **Vehicular Emissions Scheme (VES)**: The vehicular emissions label will display the emissions band of the five pollutants, the resultant VES rebate or surcharge, and the fuel economy of the car.

  More information may be found here:
  https://onemotoring.lta.gov.sg/content/onemotoring/home/buying/upfront-vehicle-costs/emissions-charges.html

- **SGLS** is an environmental standard and certification mark that is applied to products which have passed stringent standards of environmental processes and procedures.

  More information may be found here:
  https://sgls.sec.org.sg/

IV. 3R Goals for Cross−cutting Issues	
Goal 23	Promote **green and socially responsible procurement** at all levels, thereby creating and expanding 3R industries and markets for environmentally-friendly goods and products.

- **Project: Eco-Office, Project: Eco-Shop and Project: Eco-F&B**, which are certification programmes for offices, retailers and Food and Beverage (F&B) operators implement effective environmentally-friendly practices.

  More information may be found here:
  https://sgls.sec.org.sg/cms.php?cms_id=14

- **Logo for Products with Reduced Packaging (LPRP)** was launched on 5 June 2017, and is a logo introduced under the SPA to mark the consumer products by SPA signatories that have undergone a reduction in the amount of packaging material used. The LPRP will enable consumers to identify products with reduced packaging and recognise companies that have made the effort to minimise packaging waste. Currently, the LPRP is offered to SPA signatories for them to print on those of their products which have undergone reduction in the use of packaging materials (e.g., reduction in thickness, reduction in weight, elimination of unnecessary packaging etc.). The criteria for use of the LPRP is determined by a panel made up of members from the SPA Governing Board.

  More information may be found at:
  https://www.nea.gov.sg/programmes-grants/schemes/singapore-packaging-agreement

- **Climate-friendly Label for household refrigerators and air-conditioners (RACs)** helps consumers to identify and select air-conditioner and refrigerator models that use climate-friendly refrigerants.

  More information may be found at: *https://www.nea.gov.sg/media/news/news/index/nea-introduces-measures-to-reduce-greenhouse-gas-emissions-from-refrigeration-air-conditioning*

Q-3 Please provide a list of criteria for eco-labeled products and services in your country.

Please refer to webpages provided for Goal 23, Q-2.

Q-4 Please provide the list of Ministries and major Government Agencies which have adopted green procurement policy.

-

IV. 3R Goals for Cross−cutting Issues	
Goal 23	Promote **green and socially responsible procurement** at all levels, thereby creating and expanding 3R industries and markets for environmentally-friendly goods and products.

Q-5 What % of municipalities have adopted the green procurement policy?

-

Challenges (policy/ institutional/ technological/ financial) faced in implementation:
-

Examples of pilot projects, master plans and/or policies developed or under development – include websites where relevant
-

Important policies/programmes/projects/master plans the government plans to undertake within next five years (2016~2021)
Restriction on the supply of RAC equipment using high-GWP refrigerants

Singapore is planning to progressively phasing out RAC equipment that use high-GWP refrigerants. NEA is looking at restricting the supply of the following RAC equipment in Singapore from Q4 2022 as there are climate-friendly alternatives:

- Household air-conditioners that use refrigerants with GWP of more than 750;
- Household refrigerators that use refrigerants with GWP of more than 15; and
- Water-cooled chillers that use refrigerants with GWP of more than 15.

Is this Goal relevant for your country? ☒ Highly ☐ Partially ☐ Not at all

IV. 3R Goals for Cross−cutting Issues	
Goal 24	**Phase out harmful subsidies that favour unsustainable use of resources (raw materials and water) and energy**, and channel the freed funds in support of implementing the 3Rs and efforts to improve resource/energy efficiency.
Q-1 Are there any government subsidy programmes that directly or indirectly favour unsustainable use of resources (raw materials, water, and energy)? If so, please provide a list of such programmes along with the responsible Ministry or Agency administering and implementing it. -	
Challenges (policy/ institutional/ technological/ financial) faced in implementation: -	
Examples of pilot projects, master plans and/or policies developed or under development – include websites where relevant -	
Important policies/programmes/projects/master plans the government plans to undertake within next five years (2016~2021) -	
Is this Goal relevant for your country? ☐ Highly ☐ Partially ☒ Not at all	

IV. 3R Goals for Cross−cutting Issues	
Goal 25	**Protect public health and ecosystems, including freshwater and marine resources by eliminating illegal** activities of open dumping, including dumping in the oceans, and controlling open burning in both urban and rural areas.

Q-1 Is waste management a public health priority in your country?

Yes, it is.

Q-2 What are the rules and regulations to prevent open dumping and open burning of waste?

Illegal Dumping of Waste

Under EPHA, Cap 95, Section 17(1)(h) – Prohibition against throwing refuse, etc., in any public place, "Any person found guilty under this sub-section, is liable to be fined an amount not exceeding $5,000 for a first conviction and Section 20 - Prohibition against dumping and disposing, "Any person found guilty under this sub-section, is liable to be fined an amount not exceeding $50,000 or to imprisonment for a term not exceeding 12 months or to both for a first conviction".

More information may be found here:
https://sso.agc.gov.sg/Act/EPHA1987

Open Burning of Waste

Under Environmental Public Health (Public Cleansing) Regulations, Regulation 6A – Prohibition on open burning, etc, "No person shall carry out, or cause or permit, any open burning of refuse or waste in or at any place, except at a campfire, barbeque or in relation to any practice of a religious nature.".

More information may be found here:
https://sso.agc.gov.sg/SL/EPHA1987-RG3

Q-3 Rank the five most important rivers in terms of water quality (BOD values) passing through major cities and urban areas?

-

Q-4 What are the specific laws, rules and regulations in place to prevent littering in river and water bodies?

The EPHA and its subsidiary legislations aim to deter littering in public places, in addition to other issues.

More information may be found here:
https://legisgov.agc.gov.sg/Act/EPHA1987?ViewType=Sl

The discharge of wastewater into open drains, canals and rivers is regulated by the EPMA and the Environmental Protection and Management (Trade Effluent) Regulations.

More information may be found here:

IV. 3R Goals for Cross−cutting Issues	
Goal 25	**Protect public health and ecosystems, including freshwater and marine resources by eliminating illegal** activities of open dumping, including dumping in the oceans, and controlling open burning in both urban and rural areas.

https://www.nea.gov.sg/our-services/pollution-control/water-quality/keeping-our-water-clean.

Q-5 What are the specific laws, rules and regulations in place to prevent marine littering?

The Prevention of Pollution of the Sea Act and its subsidiary legislation aim to prevent sea pollution, whether originating from land or from ships. The Act also gives Maritime Port Authority (MPA) the power to take preventive measures to prevent pollution, including denying entry or detaining ships.

More information may be found here:
https://www.mpa.gov.sg/web/portal/home/port-of-singapore/maritime-legislation-of-singapore/prevention-of-pollution-of%20the-sea-act

Challenges (policy/ institutional/ technological/ financial) faced in implementation:
-

Examples of pilot projects, master plans and/or policies developed or under development – include websites where relevant
-

Important policies/programmes/projects/master plans the government plans to undertake within next five years (2016~2021)
-

Is this Goal relevant for your country? ☒ Highly ☐ Partially ☐ Not at all

IV. 3R Goals for Cross−cutting Issues	
Goal 26	Facilitate the international circulation of re-usable and recyclable resources as well as remanufactured products as mutually agreed by countries and in accordance with international and national laws, especially the Basel Convention, which contributes to the reduction of negative environmental impacts and the effective management of resources.

Q-1 What are major recycling industries in your country?

There are recycling plants for construction and demolition waste, plastic waste, e-waste, wood/horticultural waste and ferrous metals.

Q-2 Please specify the regulation on transboundary movement of hazardous waste.

Basel Convention

Singapore acceded to the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (Basel Convention) in the control of export, import and transit of hazardous wastes on 2 January 1996. On 16 March 1998, Singapore enacted the Hazardous Waste (Control of Export, Import and Transit) Act and its Regulations to regulate the control of export, import and transit of hazardous wastes in accordance with the principles and provisions of the Basel Convention.

Under the Hazardous Waste (Control of Export, Import and Transit) Act and its Regulations, any person who wishes to export, import or transit hazardous wastes shall obtain a permit from the NEA. The NEA adopts the Prior Informed Consent (PIC) procedure of the Basel Convention in granting any permit for the export, import or transit of hazardous wastes controlled under the Convention.

More information may be found here:
https://www.nea.gov.sg/corporate-functions/resources/legislation-international-law/multilateral-environmental-agreements/chemical-safety/basel-convention/basel-convention-on-the-control-of-transboundary-movements-of-hazardous-wastes-and-their-disposal

Q-3 If your government has restriction on import of non-hazardous waste or quality control of non-hazardous waste, please list it up.

Singapore does not encourage the import of waste. The need for import of waste is assessed on a case-by-case basis.

Q-4 Does your government restrict import of remanufactured goods?

No

Q-5 Does your government regard remanufactured goods as secondhand goods, and regulate it as secondhand goods?

No

IV. 3R Goals for Cross−cutting Issues	
Goal 26	Facilitate the international circulation of re-usable and recyclable resources as well as remanufactured products as mutually agreed by countries and in accordance with international and national laws, especially the Basel Convention, which contributes to the reduction of negative environmental impacts and the effective management of resources.
Challenges (policy/ institutional/ technological/ financial) faced in implementation: -	
Examples of pilot projects, master plans and/or policies developed or under development – include websites where relevant -	
Important policies/programmes/projects/master plans the government plans to undertake within next five years (2016~2021) -	
Is this Goal relevant for your country? ☒ Highly ☐ Partially ☐ Not at all	

IV. 3R Goals for Cross−cutting Issues

Goal 27 Promote data collection, compilation and sharing, public announcement and application of statistics on wastes and the 3Rs, to understand the state of waste management and resource efficiency.

Q-1 Please give an overview on availability of various data and information on material flow and waste management by checking (X or ✓) the appropriate boxes. (Please respond on both "Data Availability" and Monitoring Base")

Data Type	Data Availability			Monitoring Base	
	Good	Very limited	No data exist	Good	Not good
Waste generation	✓			✓	
Material flow			✓		✓
Cyclical use			✓		✓
Amount of final disposal	✓			✓	
Disposal to land	N.A.	N.A.	N.A.	N.A.	N.A.
Direct disposal to water	N.A.	N.A.	N.A.	N.A.	N.A.
Import of waste	✓			✓	
Export of waste	✓			✓	
Total landfilled waste	✓			✓	
Import of recyclables	✓			✓	
Export of recyclables	✓			✓	
Hazardous waste generation (solid, liquid, sludge, etc.)	✓			✓	
e-waste generation		✓			✓

(Please add any other date type relevant to your country)

Q-2 What are the current and planned government policies and programmes to strengthen data and information availability in waste sector?

The Mandatory Waste Reporting waste statistics are compiled annually.

More information on the programme can be found here:
https://www.nea.gov.sg/our-services/waste-management/mandatory-waste-reporting.

NEA tabulates the national waste and recycling statistics on a calendar year basis. The compilation effort entails the collection of data for the amounts of waste recycled and disposed of. This would involve conducting industry key stakeholder surveys, requesting data from other government agencies, collating/analysing the data, etc. The annual waste and recycling statistics can be found at the following website:
https://www.nea.gov.sg/our-services/waste-management/waste-statistics-and-overall-recycling

Challenges (policy/ institutional/ technological/ financial) faced in implementation:

Suitable platform for companies to report so that requirements would not be too onerous or duplicative.

IV. 3R Goals for Cross−cutting Issues	
Goal 27	Promote data collection, compilation and sharing, public announcement and application of statistics on wastes and the 3Rs, to understand the state of waste management and resource efficiency.

Examples of pilot projects, master plans and/or policies developed or under development – include websites where relevant

Waste statistics are compiled and more information on the recycling statistics may be found here: *https://www.nea.gov.sg/our-services/waste-management/waste-statistics-and-overall-recycling*

Important policies/programmes/projects/master plans the government plans to undertake within next five years (2016~2021)

Resource Sustainability Act (RSA)

Under the Resource Sustainability Act, producers of packaged products and retailers such as supermarkets will need to report data on the packaging placed on the market, and submit plans to reduce, reuse or recycle packaging in Singapore. This was implemented in 2021. NEA will also impose the Extended Producer Responsibility (EPR) framework on producers of Electrical and Electronic Equipment (EEE) in 2021. More details were given under Goal 1.

Is this Goal relevant for your country? ☒ Highly ☐ Partially ☐ Not at all

IV. 3R Goals for Cross−cutting Issues	
Goal 28	Promote heat recovery (waste-to-energy), in case wastes are not re-usable or recyclable and proper and sustainable management is secured.

Q-1 What are the government policies and programmes, including incentives, for waste-to-energy programmes?

All incinerable waste that is not sent for recycling must be disposed of at the WtE plants. Only incineration ash and non-incinerable waste are allowed to be disposed of at Semakau Landfill.

NEA encourages processes that can maximise energy recovery, minimise ash & land use. To maximise efficiency, wood and horticultural waste are segregated and sent to biomass WtE plants for co-/tri-generation (e.g., conversion into utility steam for industry use).

Challenges (policy/ institutional/ technological/ financial) faced in implementation:

-

Examples of pilot projects, master plans and/or policies developed or under development – include websites where relevant

In 2021, the 6th WtE plant in Singapore (TuasOne WtE plant) began commercial operations to provide 3,600 tonnes per day of incineration capacity to Singapore. Located at a 4.8 hectare site, the plant is Singapore's most compact and energy-efficient WtE plant.

NEA co-funded the development of a Waste-to-Energy Research Facility (WTERF), a 11.5 tonnes per day slagging gasification plant in Singapore. Located at Tuas South, the plant was commissioned in Mar 2019 and is managed, operated and maintained by NTU to facilitate research using municipal waste generated within NTU campus. The WTERF has plug-and-play features to enable the test-bedding of innovative technologies for converting waste into energy and useful materials.

More information can be found here:
https://www.ntu.edu.sg/newri/research-capabilities/waste-to-energy-research-facility-(wte-art)

NEA is also developing the IWMF (mentioned in Goal 7) to meet Singapore's waste management needs and help it achieve long term environmental sustainability. The IWMF will be completed in phases with the first phase slated for completion by 2025.

More information may be found here:
https://www.nea.gov.sg/our-services/waste-management/waste-management-infrastructure/integrated-waste-management-facility

Important policies/programmes/projects/master plans the government plans to undertake within next five years (2016~2021)

-

Is this Goal relevant for your country? ☒ Highly ☐ Partially ☐ Not at all

IV. 3R Goals for Cross−cutting Issues	
Goal 29	Promote overall regional cooperation and multi-stakeholder partnerships based on different levels of linkages such as government-to-government, municipality-to-municipality, industry-to-industry, (research) institute-to-institute, and NGO-to-NGO. Encourage technology transfer and technical and financial supports for 3Rs from developed countries to less developed countries.

Q-1 Please provide a list of on-going bilateral/multi-lateral technical cooperation in 3R areas?

MSE and NEA cooperate with various government agencies in other countries on Solid Waste Management and 3Rs at various levels. Technical exchanges (e.g. information exchanges, workshops, site visits and study visits), policy dialogues or bilateral meetings were held under the ambit of the bilateral agreements between MSE and the respective partners. Some examples of these agreements are:

i) Memorandum of Understanding on Bilateral Partnership in Environmental Affairs with the Ministry of Development of Brunei Darussalam;
ii) Memorandum of Cooperation with the Ministry of Environment of Japan;
iii) Memorandum of Cooperation with the Ministry of Ecology and Environment of China;
iv) Memorandum of Understanding with the Ministry of Infrastructure and Water Management of the Netherlands;
v) Memorandum of Understanding with the Ministry of Environment and Food of Denmark.

Despite the COVID-19 pandemic, NEA continues to maintain fruitful professional and technical exchanges with our foreign counterparts on topics of common interest relating to Solid Waste Management and 3Rs via emails and virtual meetings.

In supporting NEA's strategic thrust of profiling and sharing Singapore's environmental expertise, SEI actively seeks to foster environmental capacity building and development on a regional and international scale. Besides facilitating bilateral technical exchanges, SEI regularly organises technical assistance training programmes for the ASEAN region as well as for small island developing states. SEI does this in partnership with International Organisations such as:

- Asia Development Bank (ADB)
- Asian Environmental Compliance and Enforcement Network (AECEN)
- British High Commission
- Cities Development Initiative for Asia (CDIA)
- Clean Air Initiative-Asia (CAI-Asia)
- Colombo Plan Secretariat
- Deutsche Gesellschaft Für Internationale Zusammenarbeit GmbH (GIZ)
- French Embassy
- Hanns Seidel Foundation (HSF)
- Japan International Cooperation Agency (JICA)
- Korea International Cooperation Agency (KOICA)
- Royal Norwegian Embassy
- Thailand International Cooperation Agency (TICA)
- United States Agency for International Development (USAID)
- United Nations Environment Programme (UNEP)
- United Nations Development Programme (UNDP)
- United Nations Industrial Development Organisation (UNIDO)
- World Health Organisation (WHO)

IV. 3R Goals for Cross−cutting Issues	
Goal 29	Promote overall regional cooperation and multi-stakeholder partnerships based on different levels of linkages such as government-to-government, municipality-to-municipality, industry-to-industry, (research) institute-to-institute, and NGO-to-NGO. Encourage technology transfer and technical and financial supports for 3Rs from developed countries to less developed countries.

Some of the training programmes have included "Waste Minimisation and Recycling Efforts in Singapore" as a topic in the curriculum.

More information may be found here:
https://www.nea.gov.sg/programmes-grants/courses/sei/programmes

Q-2 What actions are being taken to promote inter-municipal or regional cooperation in areas of waste exchanges, resource recovery, recycling, waste-to-energy and trade of recyclables?

On regional cooperation, Singapore worked together with other ASEAN Member States to develop the ASEAN Regional Action Plan (RAP) on Combating Marine Debris in the ASEAN Member States (2021-2025), which was launched on 28 May 2021. The RAP outlines 14 regional actions to enhance ASEAN's collective and individual capabilities to address marine debris pollution by promoting interventions in the plastics life cycle to reduce the production and consumptions of plastics, while promoting circularity.

More information on the ASEAN RAP can be found here: *https://asean.org/book/asean-regional-action-plan-for-combating-marine-debris-in-the-asean-member-states-2021-2025-2/*

Additionally, the biennial CleanEnviro Summit Singapore (CESG) organised by the NEA since 2012 provides a global networking platform for thought leaders, senior government officials and policy makers, regulators and industry captains to identify, develop and share practical, replicable and scalable solutions to address environmental challenges in the context of waste-water-energy nexus in Asia's growing cities. The key highlights include the Clean Environment Leaders Summit, Clean Environment Convention and Environment Expo. The next CESG will be held from 17 to 21 April 2022.

More information can be found here:
https://www.cleanenvirosummit.gov.sg/

Challenges (policy/ institutional/ technological/ financial) faced in implementation:
-

Examples of pilot projects, master plans and/or policies developed or under development – include websites where relevant
-

Important policies/programmes/projects/master plans the government plans to undertake within next five years (2016~2021)
-

Is this Goal relevant for your country? ☒ Highly ☐ Partially ☐ Not at all

IV. 3R Goals for Cross−cutting Issues	
Goal 30	Pay special attention to issues and challenges faced by developing countries including SIDS in achieving sustainable development.

Q-1 Please describe any past and on-going cooperation with SIDS (Small Island Developing States) countries in 3R areas.

The Singapore Cooperation Programme (SCP), managed by the Ministry of Foreign Affairs (MFA) Singapore, serves as the primary platform through which Singapore offers technical assistance and shares development experiences with the developing countries. Training programmes which cover the 3Rs were conducted under the Sustainability category of Singapore Co-operation Programme Training Awards (SCPTA).

More information may be found here: https://scp.gov.sg/startpublic/#!/home

Q-2 Please list 3R related projects linked to climate change, biodiversity, disaster management and sustainable tourism. (This is to be reported by SIDS countries only)

-

Challenges (policy/ institutional/ technological/ financial) faced in implementation:
-

Examples of pilot projects, master plans and/or policies developed or under development – include websites where relevant
-

Important policies/programmes/projects/master plans the government plans to undertake within next five years (2016~2021)
-

Is this Goal relevant for your country? ☐ Highly ☒ Partially ☐ Not at all

IV. 3R Goals for Cross−cutting Issues	
Goal 31	Promote 3R + "Return" concept which stands for Reduce, Reuse, Recycle and "Return" where recycling is difficult due to the absence of available recycling industries and limited scale of markets in SIDS, especially in the Pacific Region.

Q-1 What specific policies, programme, including pilot projects, are implemented to promote 3R+ "Return" concept? (This is to be reported by SIDS countries only)

NEA has launched the national voluntary partnership for e-waste recycling with interested stakeholders to bring together and enhance the various programmes under one umbrella (mentioned in Goal 3).

More information may be found here:
https://www.nea.gov.sg/programmes-grants/schemes/national-voluntary-partnership-for-e-waste-recycling;

Reverse Vending Machines

In Oct 2019, the "Recycle N Save", a joint initiative between F&N Foods Pte Ltd and NEA was launched. Under this initiative, as of end 2021, there are 50 Reverse Vending Machines (RVMs) across Singapore in locations such as commercial spaces, sports centres and schools. These RVMs offer small rewards to users when they deposit a minimum number of empty plastic drink bottles and aluminium drink cans. The initiative is aimed at nudging behaviour change and encouraging more Singaporeans to recycle their used beverage containers by giving them a small reward in return.

More information on this initiative can be found at https://recyclensave.sg.

Challenges (policy/ institutional/ technological/ financial) faced in implementation:
-

Examples of pilot projects, master plans and/or policies developed or under development – include websites where relevant
-

Important policies/programmes/projects/master plans the government plans to undertake within next five years (2016~2021)
-

Is this Goal relevant for your country? ☐ Highly ☒ Partially ☐ Not at all

IV. 3R Goals for Cross−cutting Issues	
Goal 32	Complete elimination of illegal engagement of children in the **informal waste sector** and gradually **improve** the working conditions and livelihood security, including **mandatory provision of health insurance**, for all workers.

Q-1 What is the approximate market size (in US$) of the informal waste sector?

Not applicable

Q-2 Number of annual labor inspections in waste sector?

-

Q-3 Is health insurance a mandatory to all informal workers in waste sector by law?

-

Q-4 What specific policies and enforcement mechanisms are in place to prevent illegal engagement of children in waste sector?

-

Q-5 Number of landfill sites accessible to register waste pickers?

-

Q-6 Average life span of informal waste workers?

-

Q-7 Any government vaccination programmes for informal waste workers?

-

Q-8 Any public awareness programmes for informal waste workers on health and safety measures?

-

Challenges (policy/ institutional/ technological/ financial) faced in implementation:

-

Examples of pilot projects, master plans and/or policies developed or under development – include websites where relevant

-

Important policies/programs/projects/master plans the government plans to undertake within next five years (2016~2021)

-

Is this Goal relevant for your country? ☐ Highly ☐ Partially ☒ Not at all

IV. 3R Goals for Cross−cutting Issues	
Goal 33	Promote 3Rs taking into account gender considerations.

Q-1 Please give a brief assessment on how the national, provincial and municipal governments incorporate gender considerations in waste reduction, reuse and recycle.

Not applicable.

Challenges (policy/ institutional/ technological/ financial) faced in implementation:
-

Examples of pilot projects, master plans and/or policies developed or under development – include websites where relevant
-

Important policies/programmes/projects/master plans the government plans to undertake within next five years (2016~2021)
-

Is this Goal relevant for your country? ☐ Highly ☐ Partially ☒ Not at all

Q- Please provide a brief comprehensive summary of important 3R and resource efficiency policies /programmes/ projects/ master plans of your country.

-