

Sixth Regional 3R Forum in Asia and the Pacific

“3R as an Economic Industry - Next Generation 3R Solutions for a Resource Efficient Society and Sustainable Tourism Development in Asia and the Pacific”

Malé, Maldives, 17-19 August 2015

Country Report

(Draft)

<Singapore>

This country report was prepared by the Government of Singapore as an input for the Sixth Regional 3R Forum in Asia and the Pacific. The views expressed herein do not necessarily reflect the views of the United Nations.

Country 3R Progress Report

Name of the Country: **Singapore**

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*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 interest and commitment 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 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 not only help the member countries to learn various 3R best practices in place across the region, but it would also help bi-lateral and multi-lateral development agencies, donors, development banks in assessing the sustainable needs and challenges to better devise their existing as well as future capacity building programmes and technical assistance in the areas of 3Rs and sustainable waste management.

We request you to kindly fill in the below table 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
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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?

NEA has adopted a multi-pronged approach to reduce the amount of waste generated. This includes making it convenient for people to recycle by boosting our recycling infrastructures, while at the same time continuing with outreach efforts to corporations, businesses, schools and the community. Below are some examples:

National Recycling Programme (NRP)

The NRP was launched in 2001 to provide a convenient means for residents living in public high-rise apartments and private landed housing estates to recycle their source segregated waste streams. It started off with the provision of recycling bags to households, with fortnightly door-to-door collection. The participation rate by households in NRP was 15 % at the start in 2001 and had increased to 71% in 2012. To further improve recycling infrastructure for residents, a recycling bin is provided for every HDB block from 2014 in place of the fortnightly door-to-door collection services. Residents find it more convenient in terms of space for storage of recyclables and they are able to deposit of recyclables at any time of the day. The NRP has also been enhanced to provide private landed estates with more frequent collection as well as garden waste collection, and incentive schemes such as “Cash-for-Trash” was implemented to further encourage recycling.

<http://www.nea.gov.sg/energy-waste/3rs/national-recycling-programme>

In addition, NEA has been promoting the adoption of dual-chute system for recyclables and residual waste. In light of the encouraging results of the trial projects, all new public high-rise residential developments will be fitted with Centralised Chutes for Recyclables (CCR) from 2014.

Mandatory Provision of Recycling Receptacles in Condominiums

To ensure that residents in condominiums and private apartments can recycle, it was made mandatory for all condominiums and private apartments to provide recycling receptacles within their estates.

School Recycling Corner Programme

All schools in Singapore have dedicated recycling corners and/or have recycling receptacles in their schools to promote recycling among their students.

Singapore Packaging Agreement

Waste reduction at source is one of Singapore’s key waste management strategies. This includes the Singapore Packaging Agreement (SPA), a joint initiative by NEA, the private sector and non-government organisations (NGOs), to provide a platform and structure for industries to collaborate with the government to reduce packaging waste from consumer products and the supply chain.

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<http://www.nea.gov.sg/energy-waste/3rs/singapore-packaging-agreement>

[Mandatory Waste Reporting for Large Commercial Premises](#)

In April 2014, the Environmental Public Health Act was amended to require large commercial premises to report waste data and submit waste reduction plans (including setting of targets), starting with hotels with more than 200 rooms and shopping malls with net lettable areas of more than 50,000 square feet. The reporting exercise would help build greater awareness among managers of the potential for improving their premises' waste management systems. Premises can tap on government assistance schemes / grants to support their efforts in reducing their waste.

<http://www.nea.gov.sg/energy-waste/waste-management/mandatory-waste-reporting>

Under the Community 3R Outreach Programme (CROP) all 3R community events and initiatives organised by NEA carry a common tagline: "Reduce, Reuse, Recycle. Care for Our Environment."

Other examples of instilling a 3R culture in different settings and through different media are:

- 3R Pre-school Awareness Kits
- 3R information on website
- myENV app
- 3R Video for households
- Community Events
- 3R tips and guidelines
- No Waste Day Challenge

NEA has been actively working with various stakeholders on 3R outreach and to co-develop 3R guide books. Examples of guide books developed so far are for households, condominiums & private apartments, shopping malls, hotels, industries and events.

<http://www.nea.gov.sg/energy-waste/3rs/3r-guidebooks>

To spread 3Rs message, a video entitled "3R (Reduce, Reuse, Recycle) video for households 2015" has been made available on Youtube on 27 Jul 15. The video shows how 3Rs can be easily incorporated into our daily lives. <http://youtu.be/zp-Uw7L0sTw>.

"myENV" application is also available for download for smart phones, which aims to educate people on 3Rs and it also allows them to find the nearest recycling/collection points in Singapore.

With the launch of the 'No Waste Days Challenge', we invite everyone to challenge themselves, their friends and family to adopt 'No Waste Days', by making small lifestyle changes to reduce waste and benefit the environment. Through this SG50 initiative, we hope to increase awareness of the need to reduce waste, such as food waste and plastic waste, and to encourage everyone to do so. <http://www.cgs.sg/nowastedays/>

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-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

See section on NRP above.

Q-3 Total annual government expenditure per capita (US\$ per capita) in municipal solid waste management in 2013-2014

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

It is common that people and companies embark on waste reduction projects only when there is a net financial benefit. There are also other considerations for some companies to practice recycling, such as manpower or space constraints.

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

Information provided above.

Important policies/programmes/projects/master plans the government plans to undertake within next five years (2015~2020)

Master Plan

The Sustainable Singapore Blueprint 2015 (SSB 2015) is guided by the vision of a Liveable and Endearing Home, a Vibrant and Sustainable City, and an Active and Gracious Community. To build a Vibrant and Sustainable City, one of the outcomes are to work towards becoming a ‘Zero Waste Nation’ by reducing consumption, reusing and recycling all materials to conserve precious resources and free up land for more meaningful uses. The Government, community and businesses will come together to put in infrastructure and programmes to make this our way of life. New initiatives will also be rolled out progressively to reduce waste and achieve higher overall recycling rate from current 60% to 70% in 2030.

Below are some examples of new initiatives to reduce waste generation:

- The Singapore Packaging Agreement has been extended to 2020 as part of its strategy to reduce waste. The extension will come with new initiatives such as a packaging benchmark database to allow producers to understand the potential of reducing the amount of packaging they use. A logo for products with reduced packaging will also be introduced so that consumers can make informed choices.

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.
<ul style="list-style-type: none"> • Greater promoting food waste minimisation from 2015 onwards. <ul style="list-style-type: none"> - Food waste reduction outreach programme/campaign - Work with stakeholders to co-develop guidelines for the proper handling and re-distribution of unsold and excess food, and outreach to encourage food donation. - Work with industry to develop to minimise food waste across the food supply chain to co-develop good practice guides for food manufacturing and food and beverage (F&B) retail establishments. • Pilot Save-As-You-Recycle (SAYR) at selected premises in 2015. This pilot aims to help shape behaviour of households towards waste reduction through a more equitable usage-based pricing model. 	
<i>Is this Goal relevant for your country?</i> <input checked="" type="checkbox"/> Highly <input type="checkbox"/> Partially <input type="checkbox"/> 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.
<p><i>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?</i></p> <p>Currently, homogeneous food waste from food manufacturers, such as spent yeast/grains from beer brewing, soya bean and bread waste are segregated at source for conversion into animal feed. NEA also promotes and provides Government funding support for businesses who wish to adopt on-site food waste recycling machines, which convert food waste into compost for landscaping purposes or water for non-potable use. Wood and horticultural waste are also segregated for recycling and conversion into energy at the biomass plants.</p> <p><i>Q-2 What is happening to country's organic waste?</i> (Please check the appropriate box)</p> <p><input type="checkbox"/> mostly landfilled <input checked="" type="checkbox"/> mostly incinerated <input type="checkbox"/> both landfilled and incinerated <input type="checkbox"/> mostly open dumped or open burned</p> <p>In 2014, about 70% of wood and horticultural waste are used to convert into energy at the biomass plants. 13% of food waste are recycled. All remaining organic waste is sent to waste to energy incineration plants for energy recovery.</p> <p><i>Challenges (policy/ institutional/ technological/ financial) faced in implementation:</i></p> <p>The main challenge associated with food waste recycling in Singapore is to have a cost-effective solution for collection and treatment. There is also lack of downstream demand such as animal feed and compost as Singapore lacks a significant agricultural sector.</p>	

**Voluntary Progress/Achievements/Initiatives in
Implementing Ha Noi 3R Declaration (2013~2023)**

Country Name Singapore

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.
<i>Examples of pilot projects, master plans and/or policies developed or under development – include websites where relevant</i>	
<p>NEA will be conducting the following pilots in 2015 to evaluate cost-effective methods for collecting and processing food waste, through:</p> <ul style="list-style-type: none"> • on-site food waste segregation and treatment at hawker centres • district-level collection of food waste • co-digestion food waste with used water sludge at an off-site treatment facility 	
<i>Important policies/programmes/projects/master plans the government plans to undertake within next five years (2015~2020)</i>	
<p>The government will work on the two food waste recycling pilots, as well as continue to promote recycling efforts by supporting waste reduction projects under the 3R Fund scheme and leasing out land plots for horticultural waste recycling in the Sarimbun Recycling Park.</p>	
<p><i>Is this Goal relevant for your country?</i> <input checked="" type="checkbox"/> Highly <input type="checkbox"/> Partially <input type="checkbox"/> Not at all</p>	

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)

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?

National Recycling Programme, Singapore Packaging Agreement and Mandatory Waste Reporting for targeted waste streams such as paper, plastic, glass, metal and food waste (for mandatory waste reporting only).

NEA has also developed a metal recovery facility to recover ferrous and non-ferrous metals from the incineration bottom ash (IBA) that are not able to recover from the WTE incineration plant magnetic separators. This facility can process up to 1,800 tonnes per day of IBA, and can recover ferrous metals of size above 4mm and non-ferrous metals above 2mm. The facility has commenced operation in Jul 15.

On e-waste, NEA will be forming a national voluntary e-waste recycling partnership programme to bring together stakeholders from the entire e-waste value chain and provide more convenient

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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 development of modern recycling industry.

e-waste recycling avenues for the community.

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

Same as Q1.

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

(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	✓				

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.

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

The key challenge is behavioural change in the community to practise the 3Rs in their daily lives, in turn increasing the recycling rate.

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

Sustainable Singapore Blueprint 2015 (SSB 2015)

Singapore's Government had launched the SSB 2015, a national vision with new and bold plans to create a more liveable and sustainable future for Singaporeans. The SSB 2015 is guided by the vision of a Liveable and Endearing Home, a Vibrant and Sustainable City, and an Active and Gracious Community.

To build a Vibrant and Sustainable City, one of the outcomes are to work towards becoming a 'Zero Waste Nation' by reducing consumption, reusing and recycling all materials to conserve precious resources and free up land for more meaningful uses. The Government, community and businesses will come together to put in infrastructure and programmes to make this our way of life. New initiatives will also be rolled out progressively to reduce waste and achieve higher overall recycling rate from current 60% to 70% in 2030.

A copy of the SSB 2015 is available in this webpage -> <http://www.mewr.gov.sg/ssb/>.

3R Outreach

Under the Community 3R Outreach Programme (CROP) all 3R community events and initiatives organised by NEA carry a common tagline: "Reduce, Reuse, Recycle. Care for Our Environment."

Several programmes and initiatives have been launched to promote waste minimisation and recycling in homes, schools, corporate sector, etc.

Examples of instilling 3R culture in different settings and through different media are:

- 3R Pre-school Awareness Kits
- Website enhancements
- myENV app
- 3R Video for households
- Community Events
- 3R tips and guidelines

NEA has been actively working with various stakeholders on 3R outreach and to co-develop 3R guide books. Examples of guide books developed so far are for households, condominiums & private apartments, shopping malls, hotels, industries and events.

<http://www.nea.gov.sg/energy-waste/3rs/3r-guidebooks>

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.

To spread 3Rs message, a video entitled “3R (Reduce, Reuse, Recycle) video for households 2015” has been made available on Youtube on 27 Jul 15. The video shows how 3Rs can be easily incorporated into our daily lives. <http://youtu.be/zp-Uw7L0sTw>. “myENV” application is also available for download which aim to educate people on 3Rs and it allows them to find the nearest recycling/collection points in Singapore.

National Recycling Programme (NRP)

Between 2011 to 2014, enhancement to the NRP was progressively implemented to all parts of Singapore. Under the enhancements, a recycling bin is provided for every public high-rise apartment and collection frequency is increased from once a week to at least 3 times a week. Recycling collection services for private landed estates have been increased from once every 2 weeks to weekly and additional garden waste collection is provided. All new public high-rise residential developments will be fitted with Centralised Chutes for Recyclables (CCR) from 2014 to make it easier for residents to recycle. A “Cash-for-Trash” incentive scheme was also implemented to further encourage recycling.

Mandatory Provision of Recycling Receptacles in Condominiums

To ensure that residents in condominiums and private apartments can recycle, it was made mandatory for all condominiums and private apartments to provide recycling receptacles within their estates.

School Recycling Corner Programme

All schools in Singapore have dedicated recycling corners and/or have recycling receptacles in their schools to promote recycling among their students.

E-Waste

With the supported from the NEA, various voluntary e-waste recycling programmes have been initiated by retailers and suppliers to collect electronic and electrical waste such as used computers, printers, ink and toner cartridges and telecommunications products for recycling.

More information on e-waste take-back programmes can be found at these links =>

<http://www.nea.gov.sg/energy-waste/3rs/e-waste-lamp-battery-recycling/e-waste-recycling>

<http://www.nea.gov.sg/energy-waste/3rs/e-waste-lamp-battery-recycling/lamp-battery-recycling>

NEA will be forming a national voluntary e-waste recycling partnership programme to bring together stakeholders from the entire e-waste value chain and provide more convenient e-waste recycling avenues for the community. To encourage partners to implement or expand programmes to increase e-waste recycling awareness and provide convenient recycling services for the public, NEA will be offering a funding scheme and provides up to 80% support of qualifying costs, which may include collection, recycling, education and other costs. Further information is available at this webpage:

<http://www.nea.gov.sg/energy-waste/3rs/e-waste-lamp-battery-recycling/national-voluntary-part>

**Voluntary Progress/Achievements/Initiatives in
Implementing Ha Noi 3R Declaration (2013~2023)**

Country Name
Singapore

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.
nership	
Funding	
	Apart from e-waste funding scheme, other funding for projects to reduce or recycle waste are available under 3R Fund and IES Fund, which are both administered by NEA. More information on these two funding schemes is available at the following webpages. http://www.nea.gov.sg/grants-awards/3r-fund http://www.nea.gov.sg/grants-awards/green-technology/innovation-for-environmental-sustainability-(ies)-fund
	<i>Important policies/programmes/projects/master plans the government plans to undertake within next five years (2015~2020)</i>
	As part of our efforts to increase the domestic recycling rate, NEA is exploring the possibility of extending the provision of recycling chutes to new private condominiums.
	<i>Is this Goal relevant for your country?</i> <input checked="" type="checkbox"/> Highly <input type="checkbox"/> Partially <input type="checkbox"/> 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
<i>Q-1 What specific waste management policies and programmes are introduced to encourage private sector participation in municipal waste management?</i>	
<p>As part of SSB2015 vision to build a Vibrant and Sustainable City, one of the outcomes is to work towards becoming a ‘Zero Waste Nation’. Examples of some initiatives are Singapore Packaging Agreement, Mandatory Waste Reporting for Large Commercial Premises and National voluntary e-waste recycling partnership programme. To facilitate the adoption of the 3Rs in private sectors, NEA has been working with the different sectors to co-develop 3R guidebooks for hotels, shopping malls, industrial estates and etc. NEA also encourages ground-up initiatives by private sector to do their part for the environment and 3R practices.</p>	
<i>Q-2 What are the major waste management areas that have strong involvement of private and business sector?</i> (Please check appropriate boxes and add other areas if not listed below)	
<input checked="" type="checkbox"/> waste collection <input checked="" type="checkbox"/> resource recovery <input checked="" type="checkbox"/> waste recycling <input checked="" type="checkbox"/> waste to energy, composting, etc. <input checked="" type="checkbox"/> PPP projects in waste sector	
<i>Challenges (policy/ institutional/ technological/ financial) faced in implementation:</i>	
<p>Waste disposal costs account for only a small part of the total utilities bill as compared to water, electricity and business costs. Companies may embark on waste reduction measures only when they see the net financial benefit. Extensive outreach effort is needed to make the companies realise the benefit of 3R and the potential costs savings.</p>	
<i>Examples of pilot projects, master plans and/or policies developed or under development – include websites where relevant</i>	
<p>NEA will continue to sustain our integrated waste management system which adopts the hierarchy of waste avoidance at source, recycling, resource recovery through waste-to-energy incineration plants and lastly landfilling. By reducing waste and recycling as much as possible and as a last resort recover energy at WTE plants, our goal is to conserve resource and cut waste disposal to a minimum. Our long term target for overall recycling rate is to achieve 70% by 2030.</p>	
<i>Important policies/programmes/projects/master plans the government plans to undertake within next five years (2015~2020)</i>	
<p>NEA will continue with efforts to raise overall recycling rate to achieve the long term targets.</p>	
<i>Is this Goal relevant for your country?</i> <input checked="" type="checkbox"/> Highly <input type="checkbox"/> Partially <input type="checkbox"/> 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?

Energy Efficiency

Singapore's key strategies in mitigating greenhouse gas emissions are to switch to less carbon-intensive fuels and to improve our energy efficiency. A whole-of-government approach has been adopted to implement measures to improve the energy efficiency and to reduce the energy use of various sectors. To this end, the Energy Efficiency Programme Office (E2PO), a multi-agency committee led by NEA and the Energy Market Authority (EMA) has been established. NEA has been actively promoting energy efficiency in the industry, households and public sectors through legislation, incentives and providing information.

<http://www.nea.gov.sg/energy-waste/energy-efficiency>

<http://www.e2singapore.gov.sg/>

Industry including SMEs can tap on the following resources:

Incentives

- Design for Efficiency Scheme (DfE) - Encourages investors in new facilities in Singapore to integrate energy and resource efficiency improvements into manufacturing development plans early in the design stage. Co-funds up to 50% of a design workshop, capped at \$600,000.
- Energy Efficiency Improvement Assistance Scheme (EASe) - Encourages companies to engage accredited energy services companies to conduct the detailed energy audit and to identify potential areas for energy efficiency improvement. Co-funds up to 50% of energy audit fee, capped at \$200,000.
- Grant for Energy Efficient Technologies (GREET) - Encourages the installation of energy efficient technologies or equipment. Co-funds up to 20% of the qualifying cost, capped at \$4 million.
- Investment Allowance (IA) - Encourages industry to invest in capital equipment that allows them to be more energy efficient in their operations. Provides additional 30% allowance against taxable income on top of normal capital allowance for EE investment.

Develop capabilities

- Energy Efficiency National Partnership
 - (i) Energy Management Systems - Promote the adoption of Energy Management Systems among partner companies
 - (ii) EENP Learning Network & National Energy Efficiency Conference - Provide partners with opportunities to learn and share energy efficiency ideas, strategies, technologies, best practices, standards and case studies

I. 3R Goals in Urban/Industrial Areas (3Rs in Industrial waste)	
Goal 5	<p>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.</p> <p>(iii) EENP Recognition Scheme - Accords recognition to companies through annual national awards</p> <ul style="list-style-type: none"> • Singapore Certified Energy Manager (SCEM) Programme & Training Grant – For training and certification system in energy management and training grant to encourage companies to train their employees under SCEM. • Energy Services Companies (ESCO) Accreditation Scheme - 19 accredited ESCOs and 27 Qualified Energy Services Specialist (QuESS) <p>Further details are available: http://www.nea.gov.sg/energy-waste/energy-efficiency/industry-sector</p> <p><i>Q-2 What are the capacity building programmes currently in place to build the technical capacity of SMEs in 3R areas?</i></p> <p>NEA has been working with partners in the waste management industry and association (Waste Management and Recycling Association of Singapore, WMRAS) to develop a pipeline of initiatives to improve their productivity. This includes technology innovation and adoption, a training roadmap to help their employees be more effective in their work, and new Singapore Standards for the industry.</p> <p>To build technical capacity in the waste management industry and SMEs, WSQ training courses are provided for the Waste Management Industry, a nationally recognised, competency-based training and assessment system, which is validated by industry players and regulators. It provides a structured and comprehensive approach to equip workers and professionals in the Waste Management industry with relevant skill-sets. With the aim to promote business networking opportunities and best practices amongst members, the Association has been organising activities such as talks, mission trips, conferences, exhibitions and members get together sessions etc.</p> <p>http://www.wmras.org.sg/ http://www.wmras.org.sg/training-accreditation/wsq-training-courses/</p> <p><i>Challenges (policy/ institutional/ technological/ financial) faced in implementation:</i> -</p> <p><i>Examples of pilot projects, master plans and/or policies developed or under development – include websites where relevant</i></p> <p>As an on-going effort, NEA will work with the waste management industry to improve its professionalism and productivity.</p> <p><i>Important policies/programmes/projects/master plans the government plans to undertake</i></p>

**Voluntary Progress/Achievements/Initiatives in
Implementing Ha Noi 3R Declaration (2013~2023)**

Country Name
Singapore

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.
<i>within next five years (2015~2020)</i>	
As an on-going effort, NEA will to work with the waste management industry to improve its professionalism and productivity.	
Is this Goal relevant for your country? <input checked="" type="checkbox"/> Highly <input type="checkbox"/> Partially <input type="checkbox"/> 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

NEA encourages companies to be part of our green movement and to challenge themselves to contribute to our sustainable development. More businesses can embrace the idea that doing good for the environment is an essential part of doing business in Singapore and sets them apart from others.

The Singapore Compact for CSR and the National University of Singapore Business School have conducted a study on sustainability reporting by companies listed on the SGX Mainboard. Of the 537 companies that were assessed in 2013, 160 communicated sustainability information on environmental, social or governance aspects of their businesses. Also, 16 Singapore-listed companies have submitted sustainability reports to the Global Reporting Initiative (GRI) whose Sustainability Reporting Framework is internationally recognised as an established framework for companies.

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

-

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?

One such example is the Singapore Packaging Agreement (SPA), a joint initiative by the NEA, private sector and non-governmental organisations (NGOs), provides a platform and structure for industries to collaborate with the government to reduce packaging waste from consumer products and the supply chain.

SS 587, a voluntary Singapore Standard for the management of end-of-life ICT (infocomm technology) equipment, was also launched on 12 Nov 2014 at the Electronics Recycling Asia Conference 2014. It provides companies and organisations using ICT equipment in daily operation with guidelines to manage the equipment in environmentally responsible ways when they reach end-of-life. More information on SS 587 can be found at this link.

<http://www.nea.gov.sg/energy-waste/3rs/e-waste-lamp-battery-recycling/ss-587>

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.
Challenges (policy/ institutional/ technological/ financial) faced in implementation:	
Singapore imports most of the products which pose a challenge to influence the supply chain. Efforts needed to help companies understand the benefits of being green.	
Examples of pilot projects, master plans and/or policies developed or under development – include websites where relevant	
More information on the SPA can be found at this link: http://www.nea.gov.sg/energy-waste/3rs/singapore-packaging-agreement	
Important policies/programmes/projects/master plans the government plans to undertake within next five years (2015~2020)	
<p><u>Singapore Packaging Agreement</u> The SPA has been extended to 2020 and enhanced with new initiatives, such as a packaging benchmark database to allow producers to understand the potential of reducing the amount of packaging they use. A logo for products with reduced packaging will also be introduced so that consumers can make informed choices.</p> <p><u>Sustainability Reporting</u> To help companies understand the benefits of being green and kickstart their sustainability journey, Singapore Compact has developed a one-stop resource portal – Enabling CSR Journeys – with support from NEA. It includes information on ISO 26000: Social Responsibility, which provides businesses with guidelines on how they can operate in a socially responsible manner. It also features a start-up guide to sustainability reporting and best-practice cases for businesses to learn from and adapt. To gain more support from business leaders, NEA, Singapore Compact and the Singapore Business Federation are also looking to nurture a group of local CEOs who will champion sustainability and share their sustainability journey experiences, and inspire others to adopt sustainability initiatives as part of business.</p> <p><u>PSTLES 2.0: Fully Engaged and Committed as a Sustainability Leader</u> The public sector will also do its part to push towards a more Sustainable Singapore. The Public Sector Taking the Lead in Environmental Sustainability (PSTLES) initiative was introduced in 2006 to improve resource efficiency within the public sector and to show that we walk the talk. Under a new PSTLES 2.0, agencies will set more ambitious targets for resource efficiency and put in place better organisational processes to help achieve these targets. In each Ministry, a Sustainability Manager will coordinate efforts within the Ministry and with its Statutory Boards and share good practices through a Sustainability Manager network. Agencies will develop and submit plans on how to achieve their sustainability targets. The public sector will share its progress on this PSTLES 2.0 journey by way of a Public Sector Sustainability Report that will be published every 3 years.</p>	
Is this Goal relevant for your country? <input checked="" type="checkbox"/> Highly <input type="checkbox"/> Partially <input type="checkbox"/> 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.
<i>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?</i>	
<p>Singapore's key strategy is to optimise land through an integrated planning process where long-term strategies and goals are translated into short-term plans to guide development. We also co-locate complementary activities where possible, both for the convenience of users and to maximise the use of space.</p>	
<i>Q-2 How many eco-industrial parks or zones or the like, which is supported by the government, are there in the country?</i>	
-	
<i>Challenges (policy/ institutional/ technological/ financial) faced in implementation:</i>	
<p>Availability of land is always a challenge in Singapore given many competing demands. Timing and opportunity to co-locate complementary activities is another challenge.</p>	
<i>Examples of pilot projects, master plans and/or policies developed or under development – include websites where relevant</i>	
-	
<i>Important policies/programmes/projects/master plans the government plans to undertake within next five years (2015~2020)</i>	
<p>Some examples in the waste management industry are below:</p> <p><u>Multi-Storey Recycling Facility (MSRF)</u></p> <p>Inter-Agency project team comprising NEA, JTC Corporation and Urban Redevelopment Authority (URA) are currently studying the feasibility of a Multi-Storey Recycling Facility to recycle more waste with a smaller land footprint. The MSRF is a multi-storey, multi-tenanted facility processing different waste streams that could share common facilities and services such as weighbridges and a vehicle parking depot. Related waste treatment activities that are part of a process chain could also be co-located in order to avoid further processing off-site.</p> <p><u>Integrated Waste Management Facility (IWMF)</u></p> <p>The IWMF will be part of NEA's long-term plan to meet Singapore's future waste disposal needs. As a state-of-the-art flagship facility, it will be developed to achieve greater environmental sustainability and provide Singapore with an affordable waste management system when completed in 2024. Coupled with the latest technologies and innovations, the IWMF will incorporate several key solid waste treatment processes to effectively handle multiple waste streams such as MSW, source-segregated recyclables, source-segregated food waste and treated used water sludge. To optimise land use, the IWMF will be co-located with a Water Reclamation Plant. There are many synergies from co-locating, such as food waste can be co-digested with sludge to produce biogas, water from the water reclamation plant can be used for IWMF's cooling purposes and in turns electricity generated from IWMF can be fed directly to the water reclamation plant.</p>	

**Voluntary Progress/Achievements/Initiatives in
Implementing Ha Noi 3R Declaration (2013~2023)**

Country Name
Singapore

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.

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 (SEI)

The SEI is the training and knowledge division of the NEA. Within NEA, SEI distils and documents the knowledge residing with experienced staff, as well as knowledge from other relevant sources, for transfer to the next generation of officers via its training programmes. The Institute also develops and up-skills the local industry's manpower capabilities, thereby adding value to Singapore's environmental arena. Some examples of professional programmes available on Environmental Protection are the "Management of Hazardous Substances" and "Introduction of Waste Management in Singapore". Further information is available in the following webpage:

<http://www.nea.gov.sg/training-knowledge/singapore-environment-institute/professional-programmes>

Waste Management and Recycling Association of Singapore (WMRAS)

To build technical capacity in the waste management industry and SMEs, WSQ training courses are provided for the Waste Management Industry, a nationally recognised, competency-based training and assessment system, which is validated by industry players and regulators. It provides a structured and comprehensive approach to equip workers and professionals in the Waste Management industry with relevant skill-sets. With the aim to promote business networking opportunities and best practices amongst members, the Association has been organising activities such as talks, mission trips, conferences, exhibitions and members get together sessions etc.

Further information is available in the following webpages:

<http://www.wmras.org.sg/>

<http://www.wmras.org.sg/training-accreditation/wsq-training-courses/>

Singapore Certified Energy Manager (SCEM) Programme and Training Grant

The SCEM Training Grant is a co-funding scheme administered by e2i to develop local expertise and capability in professional energy management. The scheme is targeted at engineers/ managers who manage manufacturing facilities and buildings and provide energy services or engineering consulting services. Further information is available in the following webpage:

http://www.e2singapore.gov.sg/Incentives/Singapore_Certified_Energy_Manager_Training_Grant.aspx

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 efficiency and environment-friendly technologies, etc.?

-

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

-

**Voluntary Progress/Achievements/Initiatives in
Implementing Ha Noi 3R Declaration (2013~2023)**

Country Name
Singapore

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.
<i>Examples of pilot projects, master plans and/or policies developed or under development – include websites where relevant</i> -	
<i>Important policies/programmes/projects/master plans the government plans to undertake within next five years (2015~2020)</i> Regular review of training needs for the industries.	
Is this Goal relevant for your country? <input checked="" type="checkbox"/> Highly <input type="checkbox"/> Partially <input type="checkbox"/> 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

A list of controlled toxic industrial wastes is included in the regulations and can be found in this webpage:

<http://www.nea.gov.sg/docs/default-source/anti-pollution-radiation-protection/soil-pollution/20100505422108755681.pdf?sfvrsn=2>

The list of controlled hazardous substances is available in this webpage:

<http://www.nea.gov.sg/docs/default-source/anti-pollution-radiation-protection/chemical-pollution/hazardous-substances/hs--table-1>

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

The handling, transportation, treatment and disposal of toxic industrial waste in Singapore are controlled under the Environmental Public Health (Toxic Industrial Waste) Regulations 1988.

Hazardous chemicals are controlled under The Environmental Protection and Management Act (EPMA), The Environmental Protection and Management (Hazardous Substances) Regulations and the Environmental Protection and Management (Ozone Depleting Substances) Regulations.

More details on the management of hazardous waste is available in the information paper in this webpage:

<http://www.nea.gov.sg/docs/default-source/anti-pollution-radiation-protection/chemical-pollution/management-of-hazardous-waste.pdf?sfvrsn=0>

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 (2015~2020)

In addition to regulatory controls, the co-operation of industries in ensuring that toxic industrial wastes are properly managed and disposed of in Singapore is essential. NEA will continue to work with industry and institutions in promoting better management and disposal of toxic industrial wastes through joint research and educational programmes.

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.
<i>Q-1 What specific policies, rules and regulations, including awareness programmes, are introduced to minimize food or crop waste?</i>	
<p>The Food Wastage Reduction Working Group was formed in 2012 by the Inter-Ministry Committee on Food Security to look into food wastage reduction and is co-chaired by the Agri-Food & Veterinary Authority (AVA) and the NEA and includes participants from relevant government agencies.</p> <p>http://www.mnd.gov.sg/budgetdebate2014/foodsafety_imc.htm</p>	
<i>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?</i>	
Not applicable.	
<i>Q-3 What is the average wastage of crops or agricultural produce between farms to consumers, if there is a study in your country?</i>	
<input type="checkbox"/> Very High (> 20~ 30%) <input type="checkbox"/> High (10~20%) <input type="checkbox"/> Medium (5~10%) <input type="checkbox"/> Low (< 5%) <input type="checkbox"/> Negligible (<1%)	
<i>Challenges (policy/ institutional/ technological/ financial) faced in implementation:</i>	
Not applicable.	
<i>Examples of pilot projects, master plans and/or policies developed or under development – include websites where relevant</i>	
Introduced Mandatory Waste Reporting (including food) by large commercial premises.	
<i>Important policies/programmes/projects/master plans the government plans to undertake within next five years (2015~2020)</i>	
Implement food waste reduction outreach programme, develop guidelines for donation of excess food, as well as guidelines for food manufacturers and retailers to minimise food waste. Embark on R&D on food waste reduction and recycling.	
<i>Is this Goal relevant for your country?</i> <input checked="" type="checkbox"/> Highly <input type="checkbox"/> Partially <input type="checkbox"/> 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.
<i>Q-1 How much amount of – (a) agricultural biomass waste and (b) livestock waste are grossly generated per annum?</i>	
Not applicable.	
<i>Q-2 How are most of the agricultural biomass wastes utilized or treated?</i> (Please <u>check all appropriate boxes</u>)	
<input type="checkbox"/> as secondary raw material input (for paper, bioplastic, furniture, etc.) <input type="checkbox"/> biogas/electricity generation <input type="checkbox"/> composts/fertilizers <input type="checkbox"/> mostly left unutilized or open dumped <input type="checkbox"/> mostly open burned	
<i>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.</i>	
<i>Challenges (policy/ institutional/ technological/ financial) faced in implementation:</i>	
<i>Examples of pilot projects, master plans and/or policies developed or under development – include websites where relevant</i>	
<i>Important policies/programmes/projects/master plans the government plans to undertake within next five years (2015~2020)</i>	
<i>Is this Goal relevant for your country?</i> <input type="checkbox"/> Highly <input type="checkbox"/> Partially <input type="checkbox"/> 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.
<i>Q-1 What specific policies and regulations are in place to address the issue of plastic wastes in coastal and marine environment?</i>	
Segregated waste streams including plastic waste are collected and sent to recycling facilities. Non-segregated waste is sent to waste-to-energy incineration for energy recovery.	
<i>Q-2 What extent issue of plastic waste is considered in integrated coastal zone management (ICZM)? (Please check the appropriate box)</i>	
<input type="checkbox"/> Very much <input type="checkbox"/> Somehow <input type="checkbox"/> Not at all	
<i>Q-3 Please provide a list of centre of excellences or dedicated scientific and research programmes established to address the impacts of micro-plastic particulates (<5 mm) on coastal and marine species? If yes, please provide relevant websites.</i>	
<i>Challenges (policy/ institutional/ technological/ financial) faced in implementation:</i>	
Nil.	
<i>Examples of pilot projects, master plans and/or policies developed or under development – include websites where relevant</i>	
Nil.	
<i>Important policies/programmes/projects/master plans the government plans to undertake within next five years (2015~2020)</i>	
Nil.	
<i>Is this Goal relevant for your country?</i> <input type="checkbox"/> Highly <input type="checkbox"/> Partially <input checked="" type="checkbox"/> 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 control of new developments, including e-waste facilities. This is to ensure that environmental considerations and factors are incorporated at the land use planning, development control and building control stages, so as to minimise pollution and to mitigate pollution 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. See webpage for details:

<http://www.nea.gov.sg/anti-pollution-radiation-protection/central-building-planning>

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. See webpage for details:

<http://www.mom.gov.sg/workplace-safety-and-health>

<http://www.mom.gov.sg/workplace-safety-and-health/workplace-safety-and-health-act>

Companies and organisations are also encouraged to implement proper management practices for end-of-life info-communications technology (ICT) equipment through the adoption of SS 587, a Singapore Standard on the management of end-of-life ICT equipment. SMEs can tap on the Capability Development Grant offered by SPRING Singapore for co-funding support of up to 70% of qualifying costs. See webpage for details:

<http://www.nea.gov.sg/energy-waste/3rs/e-waste-lamp-battery-recycling/ss-587>

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. The e-waste is either reused through 2nd-hand dealers, or donated to charities, or recycled.

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.

Type of e-waste	Estimated total volume generated (ton/year)	% of collected by permitted recycler	% of volume recycled in collected
Television			
Computer			
Mobile phone			
Refrigerators			
Washing machines			
Air conditioners			
Others...			

Challenges (policy/ institutional/ technological/ financial) faced in implementation:
Sustainability of voluntary efforts.

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

Various voluntary e-waste recycling programmes have been initiated by retailers and suppliers to collect electronic and electrical waste such as used computers, printers, ink and toner cartridges and telecommunications products for recycling. More information on e-waste take-back programmes can be found at this webpage:
<http://www.nea.gov.sg/energy-waste/3rs/e-waste-lamp-battery-recycling>

NEA also supported e-waste recycling under its 3R Fund.

Important policies/programmes/projects/master plans the government plans to undertake within next five years (2015~2020)

The Ministry of Environment and Water Resources and NEA are currently exploring options for a regulated e-waste management framework. In preparation for such a framework, a national voluntary partnership for e-waste recycling will first be formed to gather all the existing programmes under one umbrella to achieve the following objectives:

- Build public awareness of e-waste recycling;
- Make e-waste recycling more convenient;
- Raise standards of recycling service providers; and
- Improve data collection on e-waste generation and handling, and include more stakeholders in the formulation of the regulated e-waste management framework.

Further information is available at this webpage:
<http://www.nea.gov.sg/energy-waste/3rs/e-waste-lamp-battery-recycling/national-voluntary-partnership>

In addition, the government is considering upstream controls by restricting the use of hazardous substances in certain electrical and electronic equipment. Importers and manufacturers will be required to comply with these restrictions.

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.
<i>Is this Goal relevant for your country?</i> <input checked="" type="checkbox"/> Highly <input type="checkbox"/> Partially <input type="checkbox"/> 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.
<i>Q-1 What specific policies and regulations are introduced to prevent illegal import and export of e-waste?</i>	
<p>Singapore is party to a number of international agreements that provides guidelines or regulations on issues affecting the environment, often in areas with transboundary implications. Below are examples of multilateral Environmental Agreements:</p> <ul style="list-style-type: none"> • Basel Convention • Stockholm Convention • The PIC Procedure • Montreal Protocol • Minamata Convention <p>More information can be found at these webpages:</p> <p>http://www.nea.gov.sg/anti-pollution-radiation-protection/chemical-safety/multilateral-environmental-agreements</p> <p>http://www.mewr.gov.sg/news/singapore-s-national-statement--delivered-by-dr-vivian-balakrishnan--minister-for-the-environment-and-water-resources--at-the-conference-of-plenipotentiaries-diplomatic-conference-on-the-minamata-convention-on-mercury--kumamoto--japan-on-11-october-2013</p> <p><u>Basel Convention</u> 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.</p> <p>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. 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. More information Basel Convention is available at this webpage:</p> <p>http://www.nea.gov.sg/anti-pollution-radiation-protection/chemical-safety/multilateral-environmental-agreements</p>	

**Voluntary Progress/Achievements/Initiatives in
Implementing Ha Noi 3R Declaration (2013~2023)**

Country Name
Singapore

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.
tal-agreements/basel-convention	
<i>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?</i>	
<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
<i>Challenges (policy/ institutional/ technological/ financial) faced in implementation:</i>	
-	
<i>Examples of pilot projects, master plans and/or policies developed or under development – include websites where relevant</i>	
-	
<i>Important policies/programmes/projects/master plans the government plans to undertake within next five years (2015~2020)</i>	
Ensure compliances with the conventions.	
<i>Is this Goal relevant for your country?</i> <input checked="" type="checkbox"/> Highly <input type="checkbox"/> Partially <input type="checkbox"/> 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) Nil	
Q-2 Please provide a list of products and product groups targeted by EPR nationally? Refer to government plans within the next five years.	
Challenges (policy/ institutional/ technological/ financial) faced in implementation: To be determined when the government embarks on the study of a regulated e-waste management framework caters for Singapore.	
Examples of pilot projects, master plans and/or policies developed or under development – include websites where relevant NEA provided supported including funding for several e-waste recycling projects under its 3R Fund. Examples of such projects are white goods and florescent lamp recycling projects.	
Important policies/programmes/projects/master plans the government plans to undertake within next five years (2015~2020) The Ministry of Environment and Water Resources and NEA are currently exploring options for a regulated e-waste management framework. In preparation for such a framework, a national voluntary partnership for e-waste* recycling will first be formed to gather all the existing programmes under one umbrella to achieve the following objectives: <ul style="list-style-type: none"> • Build public awareness of e-waste recycling; • Make e-waste recycling more convenient; • Raise standards of recycling service providers; and • Improve data collection on e-waste generation and handling, and include more stakeholders in the formulation of the regulated e-waste management framework. <p>* E-waste refers to home appliances & consumer electronics, Infocomm technology equipment, other equipment powered by electricity or battery and batteries.</p>	
Is this Goal relevant for your country? <input checked="" type="checkbox"/> Highly <input type="checkbox"/> Partially <input type="checkbox"/> 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 wastes from hospitals and polyclinics are controlled under the Environmental Public Health (Toxic Industrial Waste) Regulations. Biohazardous wastes are segregated at source and stored in colour-coded plastic bags. The wastes are then put in secured containers and collected by four licensed biohazardous waste disposal companies for disposal in dedicated high temperature incinerators.

Further information on the control of biohazardous wastes is available in this webpage:

<http://www.nea.gov.sg/anti-pollution-radiation-protection/chemical-safety/toxic-industrial-waste/toxic-waste-control#controlofbio>

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 and National Environment Agency.

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 (2015~2020)

-

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 nationwide 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)?

Below are some examples:

Mandatory Energy Labelling introduced for registrable goods since 1 January 2008. Under the Energy Conservation Act (Cap. 92C), all registrable goods must carry energy labels. Under Section 12 of the Act, no person shall, in the course of any trade or business, supply any registrable goods in Singapore on or after the effective date unless the registrable goods are registered and labelled in the prescribed manner, and meet minimum energy efficiency standards where prescribed.

For more information on Mandatory Energy Labelling and Minimum Energy Performance Standards, please refer to the following webpages:

<http://www.nea.gov.sg/energy-waste/energy-efficiency/household-sector/about-mandatory-energy-labelling>

<http://www.nea.gov.sg/energy-waste/energy-efficiency/household-sector/minimum-energy-performance-standards>

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

Energy Efficiency

Singapore's key strategies in mitigating greenhouse gas emissions are to switch to less carbon-intensive fuels and to improve our energy efficiency. A whole-of-government approach has been adopted to implement measures to improve the energy efficiency and to reduce the energy use of various sectors. To this end, the Energy Efficiency Programme Office (E2PO), a multi-agency committee led by NEA and the Energy Market Authority (EMA) has been established. NEA has been actively promoting energy efficiency in the industry, households and public sectors through legislation, incentives and providing information.

<http://www.nea.gov.sg/energy-waste/energy-efficiency>

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

NEA is also working to raise productivity and standards in more labour-intensive industries that provide environmental services, so that businesses can moderate their costs where labour and material resources are increasingly limited and could become more expensive, yet deliver high standards of service that help keep Singapore clean and green. For examples,

- **Cleaning Industry** - Since 1 September 2014, licences have been required for all general cleaning businesses. This ensures better training and employment conditions for cleaners, including a Progressive Wage Model to mandate better wages in tandem with higher productivity.
- **Waste Management Industry** - NEA has also been working with partners in the waste management industry to develop a pipeline of initiatives to improve their productivity. This

**Voluntary Progress/Achievements/Initiatives in
Implementing Ha Noi 3R Declaration (2013~2023)**

Country Name Singapore

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.
includes technology innovation and adoption, a training roadmap to help their employees be more effective in their work, and new Singapore Standards for the industry.	
<i>Challenges (policy/ institutional/ technological/ financial) faced in implementation:</i>	
-	
<i>Examples of pilot projects, master plans and/or policies developed or under development – include websites where relevant</i>	
-	
<i>Important policies/programmes/projects/master plans the government plans to undertake within next five years (2015~2020)</i>	
Implement projects to improve the productivity of the waste management industry.	
<i>Is this Goal relevant for your country?</i> <input checked="" type="checkbox"/> Highly <input type="checkbox"/> Partially <input type="checkbox"/> 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.
<i>Q-1 Please share how climate mitigation is addressed in waste management policies and programmes for co-benefits?</i>	
<p>The National Climate Change Secretariat (NCCS) was established on 1 Jul 2010 under the Prime Minister’s Office to develop and implement Singapore’s domestic and international policies and strategies to tackle climate change. An Inter-Ministerial Committee on Climate Change was also formed to enhance Whole-of-Government coordination on climate change polices. More information is available in the following webpages: https://www.nccs.gov.sg/about-nccs https://www.nccs.gov.sg/about-nccs/inter-ministerial-committee-climate-change</p> <p>Singapore’s overall waste management strategy aims to reduce emissions from waste through the 3Rs (reduce, reuse and recycle), and by incinerating the remaining refuse in waste-to-energy plants. As part of the Sustainable Singapore Blueprint, we aim to improve our recycling rate to 70% in 2030. We will also maximise energy recovery by improving our waste-to-energy plants.</p>	
<i>Challenges (policy/ institutional/ technological/ financial) faced in implementation:</i>	
-	
<i>Examples of pilot projects, master plans and/or policies developed or under development – include websites where relevant</i>	
-	
<i>Important policies/programmes/projects/master plans the government plans to undertake within next five years (2015~2020)</i>	
<p><u>Integrated Waste Management Facility (IWMF)</u></p> <p>The IWMF will be part of NEA’s long-term plan to meet Singapore’s future waste disposal needs. As a state-of-the-art flagship facility, it will be developed to achieve greater environmental sustainability and provide Singapore with an affordable waste management system when completed in 2024. Coupled with the latest technologies and innovations, the IWMF will incorporate several key solid waste treatment processes to effectively handle multiple waste streams such as MSW, source-segregated recyclables, source-segregated food waste and treated used water sludge. To optimise land use, the IWMF will be co-located with a Water Reclamation Plant. There are many synergies from co-locating, such as food waste can be co-digested with sludge to produce biogas, water from the water reclamation plant can be used for IWMF’s cooling purposes and in turns electricity generated from IWMF can be fed directly to the water reclamation plant.</p>	
<i>Is this Goal relevant for your country?</i> <input checked="" type="checkbox"/> Highly <input type="checkbox"/> Partially <input type="checkbox"/> 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.
<i>Q-1 What specific policies are introduced to encourage triangular cooperation between government, scientific & research institutions and private/business sector in 3R areas?</i>	
<p>Singapore’s clean and liveable environment is ensured with the help of our partners from the People and Private sectors who take ownership of our common urban living space. As such, NEA encourages environment friendly practices through our grants and incentives to help organisations adopt greener systems. In ensuring that we are future ready, NEA also builds strong capabilities in our industry partners who provide environmental services and solutions for Singapore, through incentive schemes to spur innovations for sustainable and cost-effective environment solutions. Current NEA Grants:</p> <ul style="list-style-type: none"> • Energy Efficiency • Green Technology • 3P Partnership Fund • 3R Fund <p>http://www.nea.gov.sg/grants-awards/grants-and-incentive-schemes</p> <p>NEA’s \$27 million Environment Technology Research Programme funds applied research in waste management. Its scope will be expanded to include research in areas such as pollution control and public health. NEA also manages a \$16 million Innovation for Environmental Sustainability fund for companies seeking to test-bed technologies related to energy efficiency, environmental protection and public health.</p> <p>In August 2014, \$25 million was also allocated under National Research Foundation’s (NRF’s) Energy National Innovation Challenge for research, development and demonstration in enhancing energy and resource recovery from municipal solid waste.</p> <p>http://www.nrf.gov.sg/about-nrf/programmes/national-innovation-challenges</p>	
<i>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.)?</i>	
-	
<i>Challenges (policy/ institutional/ technological/ financial) faced in implementation:</i>	
-	
<i>Examples of pilot projects, master plans and/or policies developed or under development – include websites where relevant</i>	
-	
<i>Important policies/programmes/projects/master plans the government plans to undertake within next five years (2015~2020)</i>	
-	

**Voluntary Progress/Achievements/Initiatives in
Implementing Ha Noi 3R Declaration (2013~2023)**

Country Name
Singapore

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.

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 <u>check all</u> applicable)			
<input checked="" type="checkbox"/> NGOs	<input checked="" type="checkbox"/> Industrial Association		
<input checked="" type="checkbox"/> Local Government	<input checked="" type="checkbox"/> Academic Institution		
<input checked="" type="checkbox"/> Others, please add/specify (businesses that are/will be affected)			
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)			
<input checked="" type="checkbox"/> Very high	<input type="checkbox"/> Moderate	<input type="checkbox"/> Low	<input type="checkbox"/> 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)			
<input type="checkbox"/> Very high	<input checked="" type="checkbox"/> Moderate	<input type="checkbox"/> Low	<input type="checkbox"/> Almost Negligible
Challenges (policy/ institutional/ technological/ financial) faced in implementation:			
Comprehensive data is essential in the formulating of 3R policies and new initiatives.			
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 (2015~2020)			
The government will continue to work with the multiple stakeholders on 3Rs, such as in the areas of food waste, e-waste and packaging waste managements.			
Is this Goal relevant for your country? <input checked="" type="checkbox"/> Highly <input type="checkbox"/> Partially <input type="checkbox"/> 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?

There are various programmes specially designed for pre-schools, schools, youths, corporate and the community. NEA also organises learning journeys as part of its 3R outreach.

For examples:

Pre-school Environment Education Advisors

NEA has built a network of Pre-school Environment Education Advisors (EEAs) as a robust network of Pre-school teachers who plan, coordinate and implement environment programmes for their students and staff as well as serving as a contact point between NEA and the schools. A Pre-school 3R Awareness Kit has also been developed to help teachers plan activities to pique the preschooler' interest in the 3Rs and to reinforce their 3R awareness.

Schools Programmes

The School Recycling Corner Programme has been implemented in all schools and involves the setting up of a Recycling Corner in the school where recycling bins for paper, cans and plastic bottles as well as educational materials such as posters and booklets, are made available to the students.

In addition, the Clean and Green Singapore (CGS) Schools' Carnival is an annual platform for students, educators and 3P partners to network and showcase their environmental projects and achievements. The primary aim of the event is to promote awareness as well as encourage and motivate schools, private companies and the community to take action on environmental issues. NEA also supports the following:

Environmental Club Fund

- Environmental Education Advisors
- Environmental Champion Programme
- Clean Singapore Learning Trail
- Uniformed Group Badge Programme

More information of the programmes is available in this webpage:

<http://www.nea.gov.sg/events-programmes/programmes>

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.

Under the Community 3R Outreach Programme (CROP) all 3R community events and initiatives organised by NEA carry a common tagline: "Reduce, Reuse, Recycle. Care for Our Environment."

Examples of instilling 3R culture in different settings and through different media are:

- 3R Pre-school Awareness Kits
- Website enhancements

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.

- myENV app
- 3R Video for households
- Community Events
- 3R tips and guidelines
- No Waste Day Challenge

To spread 3Rs message, a video entitled “3R (Reduce, Reuse, Recycle) video for households 2015” has been made available on Youtube on 27 Jul 15. The video shows how 3Rs can be easily incorporated into our daily lives. <http://youtu.be/zp-Uw7LOsTw>.

“myENV” application is also available for download for smart phones, which aims to educate people on 3Rs and it also allows them to find the nearest recycling/collection points in Singapore.

With the launch of the ‘No Waste Days Challenge’, we invite everyone to challenge themselves, their friends and family to adopt ‘No Waste Days’, by making small lifestyle changes to reduce waste and benefit the environment. Through this SG50 initiative, we hope to increase awareness of the need to reduce waste, such as food waste and plastic waste, and to encourage everyone to do so. <http://www.cgs.sg/nowastedays/>

NEA also organised visits to waste management installations, such as incineration plants and Semakau Landfill.

Useful information on the 3Rs (i.e. the why, what, where, when, and how to practise the 3Rs) is made available to the public on NEA’s website at this webpage: <http://www.nea.gov.sg/energy-waste/3rs/waste-minimisation-and-recycling>

National Environment & Water (NEW) Internship

The NEW Internship identifies talented young individuals with an interest in environmental and water issues, and seeks to nurture this passion through work-based learning activities. Offered by NEA and PUB, the NEW internship programme is open to Junior College and Polytechnic students, and is one of the selection processes for the NEW Scholarship. Lasting between 4 and 6 weeks, selected students are exposed to exciting and stimulating environmental or water projects, giving them a better understanding of the dynamic environment and water sector. Interns who show promise during the NEW Internship and demonstrate their passion for environmental and water concerns will be recommended for the NEW scholarship.

National Environmental & Water (NEW) Scholarship

Led by the Ministry of the Environment and Water Resources (MEWR), and jointly launched by NEA and PUB, the National Environment and Water (NEW) Scholarship is an open public undergraduate scholarship (overseas/local) targeted at students with a passion for the environment and water sector. Under the NEW Scholarship, there are also opportunities for both undergraduates and fresh graduates to pursue the Mid-Term and Masters Scholarships.

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

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.
-	
<i>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?</i>	
-	
<i>Challenges (policy/ institutional/ technological/ financial) faced in implementation:</i>	
-	
<i>Examples of pilot projects, master plans and/or policies developed or under development – include websites where relevant</i>	
-	
<i>Important policies/programmes/projects/master plans the government plans to undertake within next five years (2015~2020)</i>	
-	
<i>Is this Goal relevant for your country?</i> <input checked="" type="checkbox"/> Highly <input type="checkbox"/> Partially <input type="checkbox"/> 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.
<i>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.</i>	
<p>The Public Sector Taking the Lead in Environmental Sustainability (PSTLES) initiative was introduced in 2006 to improve resource efficiency within the public sector and to show that we walk the talk.</p> <p>Under the PSTLES initiative, all public sector agencies have been encouraged to put in place environmental sustainability measures that encompass energy efficiency, water efficiency and recycling.</p> <p>http://www.e2singapore.gov.sg/Programmes/Public_Sector_Taking_The_Lead_in_Environmental_Sustainability.aspx</p>	
<i>Q-2 What type of coordination mechanism are there among ministries and agencies for a resource efficient economic development?</i>	
<input checked="" type="checkbox"/> Official regular coordination meeting among ministries and agencies <input type="checkbox"/> Official ad-hoc coordination meeting among ministries and agencies <input type="checkbox"/> Informal meeting among ministries and agencies <input type="checkbox"/> Other coordination mechanisms (please add/specify)	
<i>Challenges (policy/ institutional/ technological/ financial) faced in implementation:</i>	
-	
<i>Examples of pilot projects, master plans and/or policies developed or under development – include websites where relevant</i>	
<p><i>Important policies/programmes/projects/master plans the government plans to undertake within next five years (2015~2020)</i></p> <p>PSTLES 2.0: Fully Engaged and Committed as a Sustainability Leader</p> <p>Under a new PSTLES 2.0, agencies will set more ambitious targets for resource efficiency and put in place better organisational processes to help achieve these targets. In each Ministry, a Sustainability Manager will coordinate efforts within the Ministry and with its Statutory Boards and share good practices through a Sustainability Manager network. Agencies will develop and submit plans on how to achieve their sustainability targets. The public sector will share its progress on this PSTLES 2.0 journey by way of a Public Sector Sustainability Report that will be published every 3 years.</p>	
<i>Is this Goal relevant for your country?</i> <input checked="" type="checkbox"/> Highly <input type="checkbox"/> Partially <input type="checkbox"/> 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?

Under the Public Sector Taking the Lead in Environmental Sustainability (PSTLES), public sector agencies are to procure the most cost-effective appliances, taking into account life cycle costs.

http://www.e2singapore.gov.sg/Programmes/Public_Sector_Taking_The_Lead_in_Environmental_Sustainability.aspx

Public sector agencies are also encouraged to adopt the Guaranteed Energy Savings Performance (GESP) contracting model when undertaking building retrofit projects. Under the GESP contracting model, an accredited Energy Services Company (ESCO) is to be engaged.

http://www.e2singapore.gov.sg/Programmes/Public_Sector_Taking_The_Lead_in_Environmental_Sustainability.aspx

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

Examples of some eco-labelling schemes are below:

- ✓ **Singapore Green Labelling Scheme (SGLS)** is an environmental standard and certification mark that is applied to products which have passed stringent standards of environmental processes and procedures.
<http://sgls.sec.org.sg/>
- ✓ **Mandatory Energy Labelling Scheme (MELS)** allows consumers to compare energy efficiency performance and annual energy costs of different appliance models in order to make informed purchasing decisions. The scheme covers air-conditioners, refrigerators, clothes dryers, televisions and lamps.
<http://www.nea.gov.sg/energy-waste/energy-efficiency/household-sector/about-mandatory-energy-labelling>
- ✓ **Eco-Office, Eco-shop and Eco-F&B**
http://sgls.sec.org.sg/cms.php?cms_id=14
- ✓ **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.
http://www.bca.gov.sg/greenmark/green_mark_buildings.html
- ✓ **Fuel Economy Labelling Scheme (FELS)** helps car buyers to choose fuel-efficient vehicles by highlighting each vehicle model's fuel consumption per 100 km.
http://www.onemotoring.com.sg/publish/onemotoring/en/Ita_information_guidelines/buy_a_new_vehicle/fuel_economy.html

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

Refer to webpages provided above.

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.
<i>Q-4 Please provide the list of Ministries and major Government Agencies which have adopted green procurement policy.</i>	
-	
<i>Q-5 What % of municipalities have adopted the green procurement policy?</i>	
-	
<i>Challenges (policy/ institutional/ technological/ financial) faced in implementation:</i>	
-	
<i>Examples of pilot projects, master plans and/or policies developed or under development – include websites where relevant</i>	
-	
<i>Important policies/programmes/projects/master plans the government plans to undertake within next five years (2015~2020)</i>	
<ul style="list-style-type: none"> • Embark on PSTLES 2.0 journey. • Introduce a logo for products with reduced packaging so that consumers can make informed choices. 	
<i>Is this Goal relevant for your country?</i> <input checked="" type="checkbox"/> Highly <input type="checkbox"/> Partially <input type="checkbox"/> 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.
<i>Q-1 Are there any government subsidy programmes that directly or indirectly favour unsustainable use of resources (raw materials, water, energy)? If so, please provide a list of such programmes along with the responsible Ministry or Agency administering and implementing it.</i>	
Not applicable.	
<i>Challenges (policy/ institutional/ technological/ financial) faced in implementation:</i>	
<i>Examples of pilot projects, master plans and/or policies developed or under development – include websites where relevant</i>	
<i>Important policies/programmes/projects/master plans the government plans to undertake within next five years (2015~2020)</i>	
<i>Is this Goal relevant for your country?</i> <input type="checkbox"/> Highly <input type="checkbox"/> Partially <input checked="" type="checkbox"/> 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.

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

Illegal Dumping of Waste

Under Environmental Public Health Act (EPHA), Cap 95, 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".

The EPHA can be viewed at the following webpage:

<http://statutes.agc.gov.sg/aol/search/display/view.w3p;ident=b03fa9ac-f7e8-460a-aad1-74fd3fed6695;page=0;query=DocId%3A%228615ccd4-a019-485d-aa9e-d858e4e246c5%22%20Status%3Ainforce%20Depth%3A0;rec=0#pr20-he-.>

Open burning of Waste

Under Environmental Public Health (Public cleansing) Regulations, Section 6A.

The regulations can be viewed at the following webpage:

<http://statutes.agc.gov.sg/aol/search/display/view.w3p;page=0;query=Id%3A%229ca1a537-b4a2-49ad-a00b-4a4a8170b04f%22%20Status%3Ainforce;rec=0>

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

Allowable Limits For Trade Effluent Discharge To Sewer/ Watercourse/ Controlled Watercourse is available at the following webpage:

<http://www.nea.gov.sg/anti-pollution-radiation-protection/water-pollution-control/allowable-limits>

NEA Pollution Control Department regularly monitors the water quality of various inland water bodies and coastal areas. The water quality is published in the Environmental Protection Division Annual Report provided in the link below. (Please refer to page 48 to 51 of the report)

<http://www.nea.gov.sg/docs/default-source/training-knowledge-hub/publications/neareport2013.pdf?sfvrsn=2>

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

NEA regulates water pollution and quality in Singapore's sewerage system, as well as inland water bodies and coastal areas.

The control of soil pollution is also an important aspect since pollutants in the soil are likely to make their way into the water system as run-off or groundwater. Soil pollution control in Singapore primarily focuses on the proper use of approved pesticides to combat termites in soil.

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.

Sewerage System

The Public Utilities Board (PUB) administers the Sewerage and Drainage Act (SDA) and the Sewerage and Drainage (Trade Effluent) Regulations to regulate the sewerage system and the treatment and discharge of industrial wastewater into public sewers, respectively.

All wastewater is required to be discharged into the public sewerage system. The discharge of wastewater into open drains, canals and rivers is regulated by the Environmental Protection and Management Act (EPMA) and the Environmental Protection and Management (Trade Effluent) Regulations. The EPMA and its Regulations are administered by NEA's Pollution Control Department (PCD).

Industrial wastewater must be treated to specified standards before being discharged into a sewer or watercourse (if the public sewer is not available). Additionally, industries generating large quantities of acidic effluent are required to install a pH monitoring and shut-off control system to prevent the discharge of acidic effluent into public sewers. Industries may apply to PUB for permission to directly discharge their trade effluent containing biodegradable pollutants into public sewers with a tariff payment. The tariff determined by their biochemical oxygen demand (BOD) and total suspended solids (TSS) loading exceeding the allowable standards.

Inland and Coastal Waters

The water quality of both inland water bodies and coastal areas is regularly monitored. For inland water bodies, the parameters monitored include pH, dissolved oxygen, biochemical oxygen demand, total suspended solids, ammonia and sulphide. Coastal water samples are analysed for metals, total organic carbon, and other physical, chemical and bacteriological parameters.

<http://www.nea.gov.sg/anti-pollution-radiation-protection/water-pollution-control>

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

Marine Port Authority (MPA)

The Prevention of Pollution of the Sea Act aims to prevent sea pollution, whether originating from land or from ships. The Act also gives MPA the power to take preventive measures to prevent pollution, including denying entry or detaining ships.

http://www.mpa.gov.sg/sites/port_and_shipping/maritime_legislation_of_singapore/prevention_of_pollution_of_the_sea_act.page

Prevention of Pollution of the Sea (Garbage) Regulations.

http://www.mpa.gov.sg/sites/pdf/03_07_prevention_of_pollution_of_the_sea_garbage_regulations.pdf

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.
<i>Challenges (policy/ institutional/ technological/ financial) faced in implementation:</i> -	
<i>Examples of pilot projects, master plans and/or policies developed or under development – include websites where relevant</i> -	
<i>Important policies/programmes/projects/master plans the government plans to undertake within next five years (2015~2020)</i> -	
<i>Is this Goal relevant for your country?</i> <input checked="" type="checkbox"/> Highly <input type="checkbox"/> Partially <input type="checkbox"/> 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.
<p>Q-1 What are major recycling industries in your country? Ferrous and non-ferrous metals, plastics, e-waste, horticultural waste, construction and demolition waste.</p> <p>Q-2 Please specify the regulation on transboundary movement of hazardous waste.</p> <p><u>Basel Convention</u> 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.</p> <p>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. 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. More information is available at this webpage:</p> <p>http://www.nea.gov.sg/anti-pollution-radiation-protection/chemical-safety/multilateral-environmental-agreements/basel-convention</p> <p>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 and the import is based on case-by-case.</p> <p>Q-4 Does your government restrict import of remanufactured goods? Import is based on case-by-case.</p> <p>Q-5 Does your government regard remanufactured goods as secondhand goods, and regulate it as secondhand goods? No.</p>	
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 (2015~2020)	

**Voluntary Progress/Achievements/Initiatives in
Implementing Ha Noi 3R Declaration (2013~2023)**

Country Name
[Singapore](#)

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.

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 data 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?

Collaboration with premises/sectors on waste data. Introduce Voluntary or Mandatory waste reporting by premises.

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

Waste statistics are compiled and made available on NEA’s website at this link.
<http://www.nea.gov.sg/energy-waste/3rs/recycling-statistics>

Important policies/programmes/projects/master plans the government plans to undertake within next five years (2015~2020)

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.
<i>Q-1 What are the government policies and programmes, including incentives, for waste-to-energy programmes?</i>	
<p>In Singapore, all incinerable waste that is not sent for recycling must be disposed of at the waste-to-energy (WTE) plants. Only incineration ash and non-incinerable waste are allowed to be disposed of at Semakau Landfill.</p> <p>For waste-to-energy, 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 waste-to-energy plants for co/trigeneration (e.g. conversion into utility steam for industry use).</p> <p>The Government also provides grant and incentives such as:</p> <ul style="list-style-type: none"> • Environment Technology Research Programme http://www.nea.gov.sg/grants-awards/green-technology#ETRP1 • National Research Foundation's (NRF's) Energy National Innovation Challenge for research, development and demonstration in enhancing energy and resource recovery from municipal solid waste. http://www.nrf.gov.sg/about-nrf/programmes/national-innovation-challenges 	
<i>Challenges (policy/ institutional/ technological/ financial) faced in implementation:</i>	
-	
<i>Examples of pilot projects, master plans and/or policies developed or under development – include websites where relevant</i>	
<p>NEA is developing a new waste-to-energy plant (6th WTE plant) which is expected to be in operation by 2019. This plant is developed under the Public Private Partnership (PPP) scheme, via a Design, Build, Own and Operate (DBOO) Model.</p>	
<i>Important policies/programmes/projects/master plans the government plans to undertake within next five years (2015~2020)</i>	
<p>To develop 6th WTE plant by 2019 and an Integrated Waste Management Facility (IWMF) by 2024.</p>	
<p><i>Is this Goal relevant for your country?</i> <input checked="" type="checkbox"/> Highly <input type="checkbox"/> Partially <input type="checkbox"/> Not at all</p>	

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.
<i>Q-1 Please provide a list of on-going bilateral/multi-lateral technical cooperation in 3R areas?</i>	
<p>In supporting NEA’s strategic thrust of profiling and sharing Singapore’s environmental expertise, the Singapore Environment Institute (SEI) under NEA 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:</p> <ul style="list-style-type: none"> • 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 Nations Development Programme (UNDP) • United Nations Industrial Development Organisation (UNIDO) • World Health Organisation (WHO) <p>Further information is available in the following webpage: http://www.nea.gov.sg/training-knowledge/singapore-environment-institute/international-programmes</p>	
<i>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?</i>	
-	
<i>Challenges (policy/ institutional/ technological/ financial) faced in implementation:</i>	
-	
<i>Examples of pilot projects, master plans and/or policies developed or under development – include websites where relevant</i>	
-	

IV. 3R Goals for Cross-cutting Issues	
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<i>Important policies/programmes/projects/master plans the government plans to undertake within next five years (2015~2020)</i>	
<p>To exchanging knowledge and share our experiences with others, within and outside of Singapore, the government is organising a biennial trio of events – the World Cities Summit (WCS), Singapore International Water Week (SIWW) and CleanEnviro Summit Singapore (CESS) which will be held in Jul 2016. They provide a platform for government leaders and industry experts to learn and share their rich experiences about sustainable urban solutions, and matchmake governments seeking solutions with industry players who can provide these solutions.</p> <p>More information on the CleanEnviro Summit Singapore 2016 can be found at this webpage: http://www.cleanenvirosummit.sg/</p>	
<i>Is this Goal relevant for your country?</i> <input checked="" type="checkbox"/> Highly <input type="checkbox"/> Partially <input type="checkbox"/> 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.
<i>Q-1 Please describe any past and on-going cooperation with SIDS (Small Island Developing States) countries in 3R areas.</i> Not applicable.	
<i>Q-2 Please list 3R related projects linked to climate change, biodiversity, disaster management and sustainable tourism. (This is <u>to be reported by SIDS countries only</u>)</i>	
<i>Challenges (policy/ institutional/ technological/ financial) faced in implementation:</i>	
<i>Examples of pilot projects, master plans and/or policies developed or under development – include websites where relevant</i>	
<i>Important policies/programmes/projects/master plans the government plans to undertake within next five years (2015~2020)</i>	
<i>Is this Goal relevant for your country?</i> <input type="checkbox"/> Highly <input type="checkbox"/> Partially <input checked="" type="checkbox"/> 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.
<i>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)</i>	
Not applicable.	
<i>Challenges (policy/ institutional/ technological/ financial) faced in implementation:</i>	
<i>Examples of pilot projects, master plans and/or policies developed or under development – include websites where relevant</i>	
<i>Important policies/programmes/projects/master plans the government plans to undertake within next five years (2015~2020)</i>	
<i>Is this Goal relevant for your country?</i> <input type="checkbox"/> Highly <input type="checkbox"/> Partially <input checked="" type="checkbox"/> 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.
<i>Q-1 What is the approximate market size (in US\$) of the informal waste sector?</i> Not applicable.	
<i>Q-2 Number of annual labor inspections in waste sector?</i> Not applicable.	
<i>Q-3 Is health insurance a mandatory to all informal workers in waste sector by law?</i> Not applicable.	
<i>Q-4 What specific policies and enforcement mechanisms are in place to prevent illegal engagement of children in waste sector?</i> Not applicable.	
<i>Q-5 Number of landfill sites accessible to register waste pickers?</i> Not applicable.	
<i>Q-6 Average life span of informal waste workers?</i> Not applicable.	
<i>Q-7 Any government vaccination programmes for informal waste workers?</i> Not applicable.	
<i>Q-8 Any public awareness programmes for informal waste workers on health and safety measures?</i> Not applicable.	
<i>Challenges (policy/ institutional/ technological/ financial) faced in implementation:</i>	
<i>Examples of pilot projects, master plans and/or policies developed or under development – include websites where relevant</i>	
<i>Important policies/programs/projects/master plans the government plans to undertake within next five years (2015~2020)</i>	
<i>Is this Goal relevant for your country?</i> <input type="checkbox"/> Highly <input type="checkbox"/> Partially <input checked="" type="checkbox"/> Not at all	

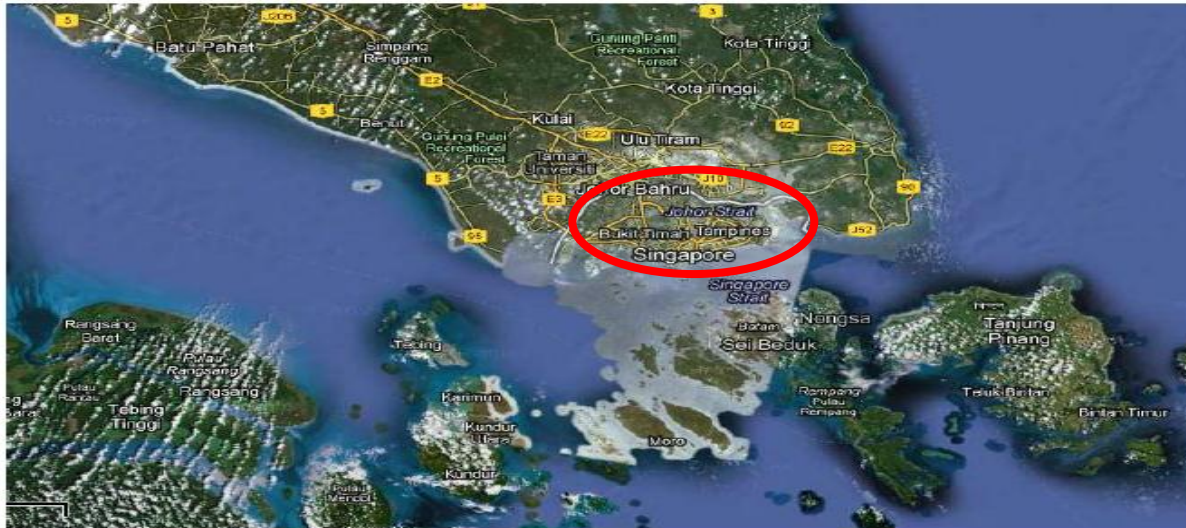
IV. 3R Goals for Cross-cutting Issues	
Goal 33	Promote 3Rs taking into account gender considerations.
<i>Q-1 Please give a brief assessment on how the national, provincial and municipal governments incorporate gender considerations in waste reduction, reuse and recycle.</i>	
Not applicable.	
<i>Challenges (policy/ institutional/ technological/ financial) faced in implementation:</i>	
<i>Examples of pilot projects, master plans and/or policies developed or under development – include websites where relevant</i>	
<i>Important policies/programmes/projects/master plans the government plans to undertake within next five years (2015~2020)</i>	
<i>Is this Goal relevant for your country?</i> <input type="checkbox"/> Highly <input type="checkbox"/> Partially <input checked="" type="checkbox"/> Not at all	

Sixth Regional 3R Forum in Asia and the Pacific

Country Breakout 4 (Singapore)

18 Aug 2015

Introduce Singapore



**Country and a
City-State**

**Small Land Area
718.3 km²**

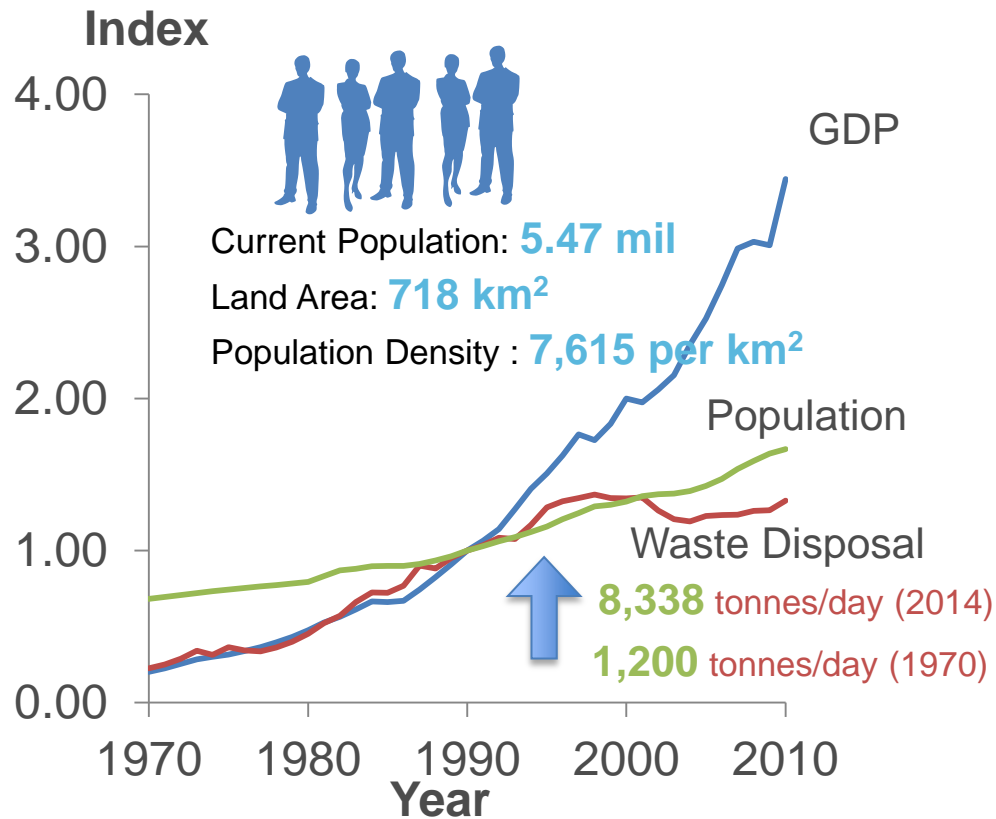
**Dense Urban
Setting
5.47 mil population**

**Limited Natural
Resources**



Key Challenges – Waste Growth and Land Scarcity

Singapore's waste generation increased about **7** folds over the past 40 years



At this rate of waste growth...

 New waste-to-energy **7-10** years

 Semakau Landfill **2030-2035**
30-35 years

New offshore landfill

But...



there will be less & less land available

Vision for Waste Management System

A sustainable, affordable & integrated waste-to-resource management system



3R practices
integrating
with daily life
and business



Vibrant Industry
supporting
waste-to-
resource
management



Maximise
resource
recovery and
energy
efficiency

Towards a
“Zero Waste Nation”



Minimise land
footprint and
environment
impact



SSB 2015

70% recycling
rate by 2030

Greater Involvement in 3R

Towards A Zero Waste Nation



- Reduce consumption, reuse and recycle all materials to conserve precious resources and free up land for more meaningful uses
- The Government, community and businesses will come together to put in infrastructure and programmes

Instil a 3R culture



Making Recycling more convenient



Dual chutes for waste and recycling at all new HDB flats



More e-waste deposit points

More Ground-up Initiatives



Save Food, Cut Waste website

Greater Community Stewardship



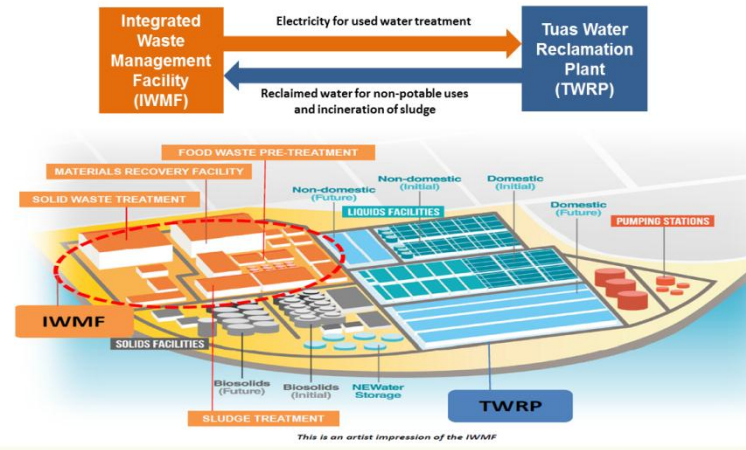
Recycle-a-Bulb@South West

Improving Our Waste Management Infrastructures

Pneumatic Waste Conveyance System



Realising Waste-Water-Energy NEXUS



Multi-Storey Recycling Facility (MSRF)



Increasing Resource Recovery



Our Environment

Safeguard • Nurture • Cherish