REDISCOVER
RECONNECT

River of Life

GUIDE TO BECOMING A ZERO WASTE SCHOOL

BEST MANAGEMENT PRACTICES

designed by freepik

JABATAN PENGAIRAN DAN SALIRAN MALAYSIA

ROLPOP 5

Global Environment Centre

Content

A little bit on
River of Life (ROL)

Transforming Klang River into a vibrant and livable waterfront with high economic value and to improve the river water quality to Class II by year 2020.

RIVER CLEANING

Clean and improve the 110km stretch along the Klang River basin from current Class III-V to Class II by 2020.

Covers the municipal areas of:

- Selayang (MPS)
- Ampang Jaya (MPAJ)
- Kuala Lumpur (DBKL)

RIVER BEAUTIFICATION

Master planning and beautification works will be carried out along a 10.7km stretch along the Klang and Gombak river corridor.

Significant landmarks in the area include Dataran Merdeka, Bangunan Sultan Abdul Samad and Masjid Jamek.

COMMERCIALISATION & TOURISM

Cleaning and beautification works will spur economic investments into the areas immediately surrounding the river corridor.

Potential government land will be identified and tendered out to private developers through competitive bidding.

Aims of ROL Public Outreach Programme (ROLPOP)

REDUCE POLLUTION

by managing solid waste through zero waste concept.

IMPROVE WATER QUALITY

according to physical, chemical and biological standards of a living and healthy river.

ENHANCING PUBLIC PARTICIPATION

towards river care, river management, monitoring and river preservation.

Introduction

As termed in Solid Waste and Public Cleansing Management Act (2007); solid waste is defined as any scrap materials or other unwanted surplus substance or rejected products arising from the application of any process; or any substance required to be disposed as of being broken, worn out, contaminated or otherwise spoiled; or any other material that according to this Act or any other written law is required by the authority to be disposed of.

TYPES OF WASTE

Municipal Solid Waste: Waste consisting of everyday items that are used and then discarded by the public. Example: product packaging.

Hazardous and Industrial Waste: Waste from factories that poses potential danger, immediate or not, to human life, wildlife and plants if not dispose of properly. Example: chemicals from laboratory.

POLICIES IN MALAYSIA

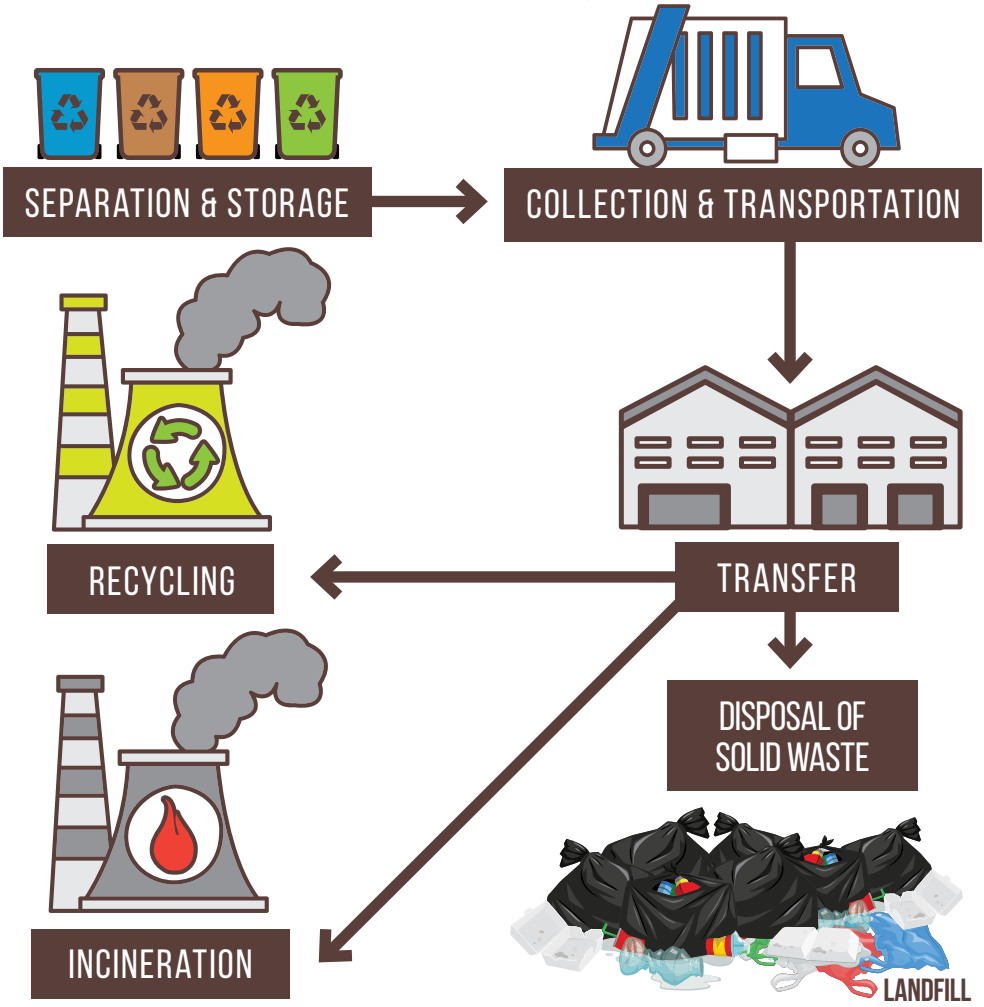
NATIONAL SOLID WASTE MANAGEMENT POLICY 2016 (JPSPN)

A comprehensive, integrated, cost effective, sustainable and socially acceptable method of solid waste management and implemented solid waste management based on waste management hierarchy which gives priority to waste reduction via 3R, intermediate treatment and final disposal.

NATIONAL CLEANLINESS POLICY 2019 (KPKT)

An improved and more organised waste management system to create greater awareness on cleanliness, improving the sustainability of the environment, circular economy, governance and highly skilled human capital.

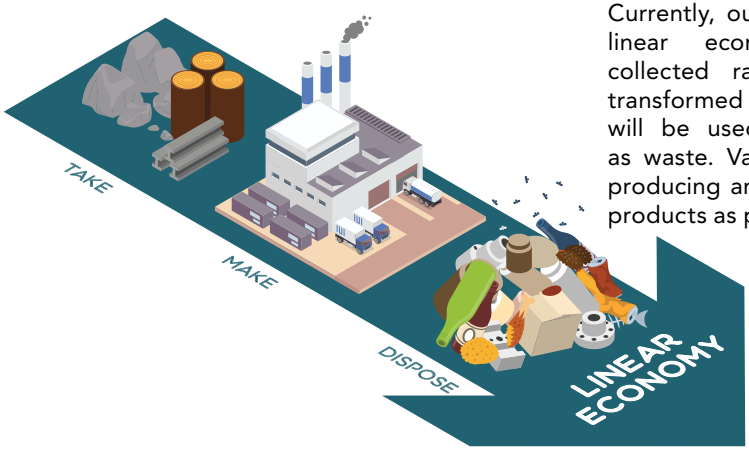
Solid Waste Management Services in Malaysia



PROBLEMS FROM RELYING ON LANDFILL:

Greenhouse gas emissions and more land area required for landfill expansion.

Integrated Waste Management (IWM)



Currently, our society is using linear economy approach: collected raw materials are transformed into products that will be used until discarded as waste. Value is created by producing and selling as many products as possible.

A circular economy is an ideal economic system of closed loops in which raw materials, components and products lose their value as little as possible and renewable energy sources are used.

This can be achieved by adopting a zero waste lifestyle.

Zero Waste: 4R2C concept*

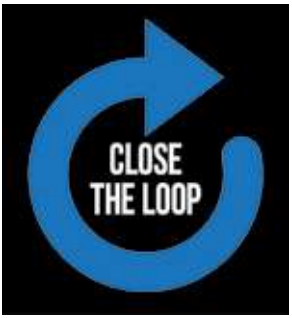
Be an environmentally-wise consumer.

by waste prevention and minimisation.

through reuse of utilised items and upcycling.

by maximising lifespan of raw material.

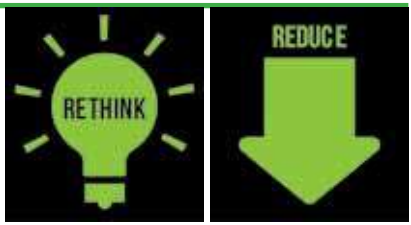
your canteen / garden waste.

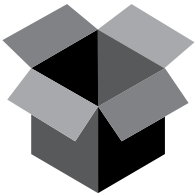


by buying back product made from recycled / reused materials.

**This 4R2C concept is developed by GEC as a localised extension of the global 3R concept.*

Consider...





PACKAGING

Buy products with little or no packaging. Refuse plastic bag when buying unless you really need one. Find alternative ways to wrap gifts (e.g. reusable cloth bag) or avoid using any wrappers.

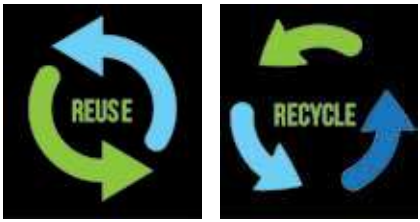
QUALITY

Buy reusable, durable and long lasting products (e.g. rechargeable batteries).

BIODEGRADABLE

Choose environmental friendly products that can be recycled or composted after usage.

... when making a purchase



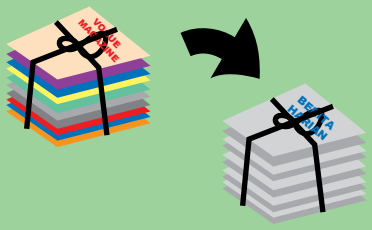
Recycle

to maximising lifespan of raw material.

1 PAPER

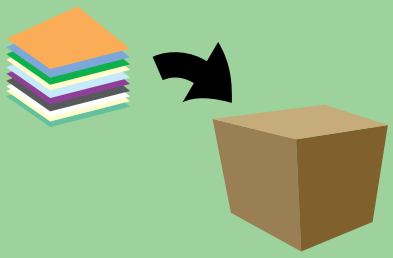
MAGAZINES, NEWSPAPER & BOOKS

Tie neatly into bundles



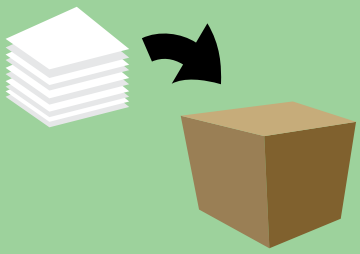
LOOSE MIXED PAPER

Place in a container



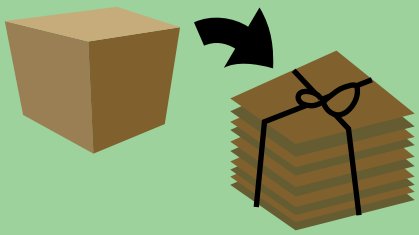
LOOSE WHITE PAPER

Place in a container



CARDBOARDS: TISSUE BOXES, SHOE BOXES & OTHER CARDBOARD BASED BOXES

Flatten and tie neatly into bundles

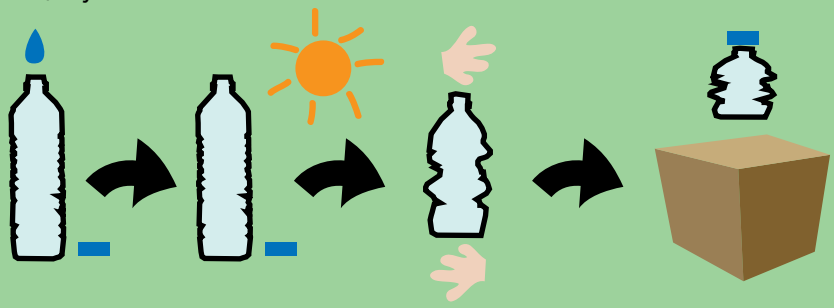


WHAT GENERALLY CANNOT BE RECYCLED?

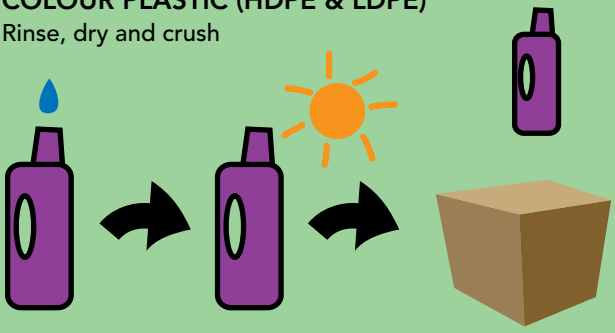
Pizza boxes or anything soiled with grease and / or food waste.

2 PLASTIC

CLEAR PLASTIC (PET 1)
Rinse, dry and crush



COLOUR PLASTIC (HDPE & LDPE)
Rinse, dry and crush

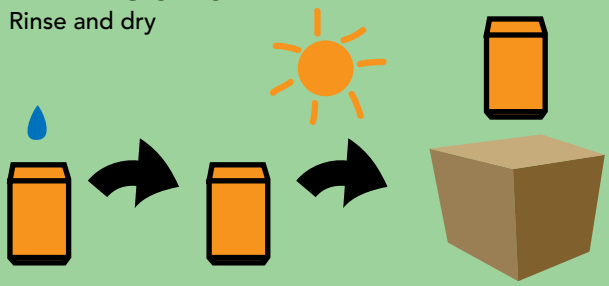


Segregate according to plastic type:

1 PET 2 HDPE 5 PP

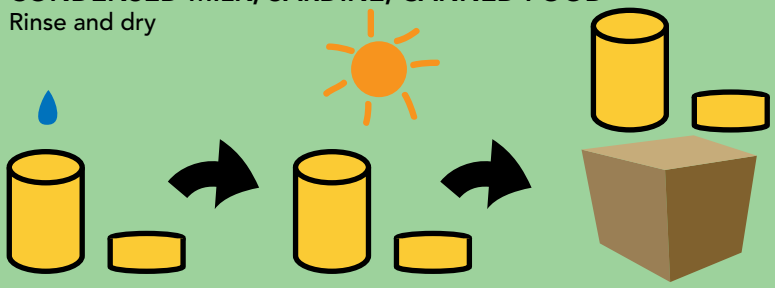
3 ALUMINIUM CANS

DRINKING CANS
Rinse and dry



4 METAL TIN & CANS

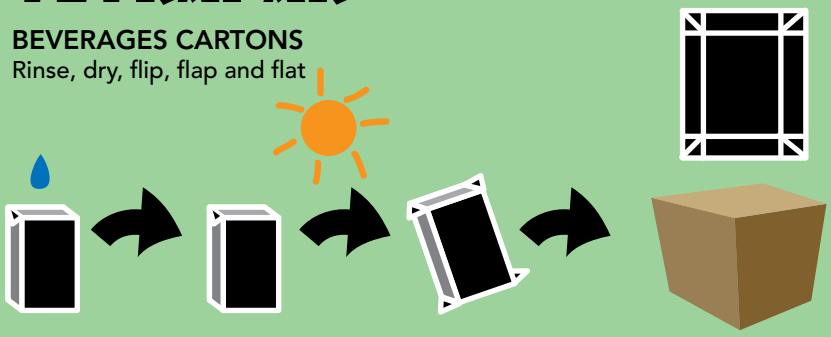
CONDENSED MILK, SARDINE, CANNED FOOD
Rinse and dry



WHAT GENERALLY CANNOT BE RECYCLED?
Aerosol cans, solvent cans and paint cans.

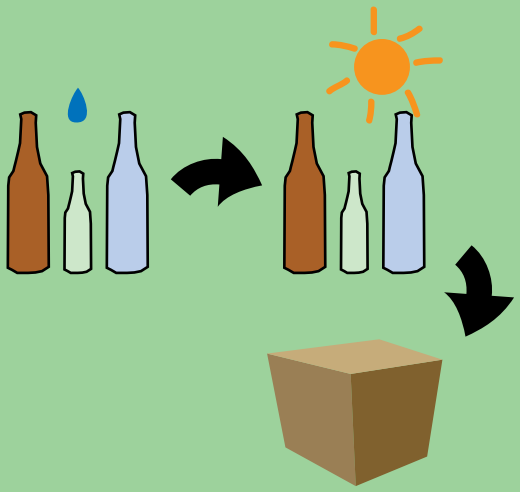
5 TETRAPAK

BEVERAGES CARTONS
Rinse, dry, flip, flap and flat



6 GLASS

ALL COLOURED AND CLEAR GLASS, WHICH INCLUDES DRINK BOTTLES, FOOD CONTAINERS, VITAMIN BOTTLES & COSMETIC JARS
Rinse and dry



ONLY CERTAIN RECYCLING CENTERS ACCEPT
ceramics, drinking glasses, window glass, mirrors and light bulbs.

Composting

There are different techniques that can be used to make compost. However, the principle or the process involved is still the same. The principle is to have alternate layers of brown and green materials that are covered up by soils.

FLOWER POT TECHNIQUE

WHAT YOU WILL NEED:

- **EMPTY FLOWER POTS**
- **GREEN MATERIAL** (vegetable & fruit peels etc., rich in nitrogen)
- **BROWN MATERIAL** (wood, dry leaves, twigs, sticks etc., rich in carbon)
- **SOIL**
- **WATER**
- **GRAVEL OR STONE**

04 At every layer that is covered up with soil, make sure to water it (damp). Do this alternately until the pot is full before moving on to the next pot.

03 For the next layer, put in the brown materials and cover loosely with a layer of soil.

02 Put in a layer of green materials and cover them loosely with a layer of soil. Do not compact the soil.

01 Put a layer of gravel or stones at the bottom of the pot for aeration. Put a layer of soil (2 inches) on top of it.

NOTE:

It is important to make sure all holes and crevices are covered with soil to avoid pests and pets from digging up the food.

During the decomposing process, make sure your compost is moist and well aerated.

Oxygen is important for your compost in order to avoid the anaerobic process (which produces biogas) from taking place. Once in a while, try to bore some holes into your compost as this allows aeration. Please note that there should be any bad odour during the process except for an earth/natural scent. The compost will be ready for use in 4-6 months.

GARBAGE ENZYME

WHAT YOU WILL NEED:

1 X **AIRTIGHT PLASTIC CONTAINER** (can expand)

3 X **FOOD SCRAPS** (vegetables, fruit skins: apple, orange, pineapple etc except durian or any meat products)

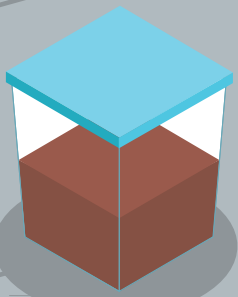
1 X **JAGGERY / BROWN SUGAR** (do not use white sugar)

10 X **WATER**

01 Dilute 1 ratio of brown sugar into 10 ratio of water in an airtight plastic container, followed by 3 ratio of food scraps.

02 Leave some space in the container for the fermentation process before closing the container tightly.

03 During the first month, open the container daily to release gas to avoid pressure buildup and to ensure a supply of oxygen to promote aerobic fermentation.
Once in a while, stir and push the floating garbage downwards.



04 Place the container in a cool, dry well-ventilated area and avoid sunlight. It wil be ready to be used after 3 months and it should be a dark brown colour.

NOTE:

Avoid using too much orange / lemon peels as it will be too acidic and will kill the good bacteria needed for the fermentation to start.

If the enzyme is black, add in the same amount of sugar and start fermentation process again.

Fully utlise the residue by reusing it for the next production by adding fresh scraps, use as fertiliser by drying and grinding, pour it into your toilet bowl or add some brown sugar to help purify the sewage.

The longer the enzyme ferments, the better it is and it never expires!

Never store the garbage enzyme in the fridge.

Close the loop

Buy back products using recycled / reused materials (upcycling).

Credit: younghouselove.com

Stationery holder

Credit: BoredPanda

Decorative vases

Credit: decorfacil.com

Tetrapak planter

For more ideas, do refer these websites:

Biji-biji Initiative: www.biji-biji.com

Kedai Bless: www.kedaibless.com

KakiDIY: www.kakidiy.com

Me.reka: mereka.my

What can you do?

BE A SMART RANGER!

SMART (Start Managing All Resources Today) Ranger Program is an environmental education program that includes the management of natural and non-natural resources in Malaysia. under this program, rangers will be trained with Zero Waste Concept using 4R2C (Rethink, Reduce, Reuse, Recycle, Compost & Close the Loop) approach.

BEST MANAGEMENT PRACTICES (BMPS)

A practice, or combination of practices, that is determined to be an effective and practicable (including technological, economic and institutional considerations) means of preventing or reducing the amount of pollution generated by point or non-point sources.

By applying BMPs, pollution can be tackled and reduced to a level compatible with good water quality goals.

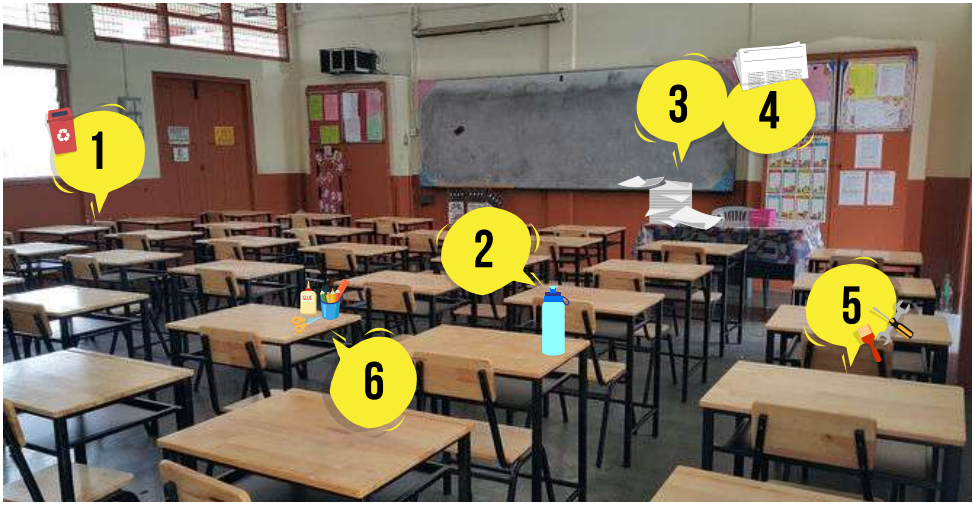
Education institutions can take part in improving river water quality by reducing waste through implementing BMPs in their:

- Classrooms
- Canteen
- Toilets
- Teachers' Office
- Cooperative
- Surau
- Lab
- Information Corners
- Garden

Disclaimer: Images and visuals used throughout this booklet are not used for the purpose of any financial gains but solely for a non-profit educational purpose.

Classrooms

Photo credit: expatgo.com



1 Install and clearly label the bins with information posters on identifying waste type to encourage separation at the source.

2 Students should bring their own water bottles and refill drinking water from water dispensers if available.

3 One sided printed papers can be reused as rough paper for mathematical calculations.

4 Used papers or old newspapers can be used as wrapping paper for 'buku latihan' or upcycled into baskets/cases/holders.

5 Repair / repurpose broken / old furniture before resorting to disposal.

6 Stationery/bags/books that are still in good condition can be donated or sold/given away at an end-of-year schoolwide sale.

Canteen

Photo credit: intriknews

1. Install and clearly label the bins with information posters on identifying waste type to encourage separation at the source.

2. A no-single use packaging policy (with penalty imposed) encourages vendors to strictly use reusable utensils / dishes and students to carry their own lunchboxes.

3. Fix fats, oil and grease (FOG) traps at the pipe outlets.

4. Encourage the use of eco-friendly cleaning products to reduce the amount of detergent / cleaning agent being washed down the drains and rivers.

5. Water thimbles can be installed on taps to reduce water usage.

6. Limit the number of tissue dispensers to encourage students to carry their own napkins; vendors can use cloth/rags to clean surfaces.

7. Used cooking oil can be stored in large jerry cans to be sold to recyclers.

8. Collect canteen waste to be made into compost and garbage enzyme for use in toilet and garden.

Toilets

Photo credit: hell0erick@twitter

1. Use natural air fresheners (like *pandan*, citronella and charcoal).
2. Place suitable indoor plants that improves air quality.
3. Encourage the use of eco-friendly cleaning products to reduce the amount of detergent / cleaning agent being washed down the drains and rivers.
4. Water thimbles can be installed on taps / shower heads to reduce water usage.
5. Place bottles (filled with pebbles) into the toilet tanks as a displacement mechanism to reduce water usage.
6. Harvested rainwater can be used for cleaning.
7. Use fruit peel enzyme as cleaning agent.

Teachers' Office

Photo credit: expatgo.com

1. Install and clearly label the bins with information posters on identifying waste type to encourage separation at the source.

2. Prioritise electronic circulation of documents.

3. One sided printed papers can be reused as rough paper for mathematical calculations.

4. Repair / repurpose broken / old furniture before resorting to disposal.

5. E-waste (batteries/laptops) can be recycled at collection points across the state, which can be accessed here: www.doe.gov.my/hhew/collection-points

Cooperative

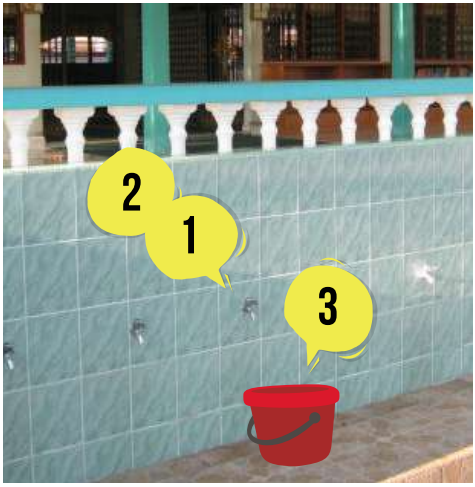
Photo credit: hmetro.com.my

1 Promote the habit of carrying reusable bags by not giving out plastic bags / unnecessary packaging material.

2 At the end of the year, organise a trade day where stationeries/ bags / uniforms in good condition can be given away / sold off / trade-in.

Surau

Photo credit: smvpd.blogspot.com



1. Use rainwater as *'air wuduk'**.
2. Water thimbles can be installed on taps to reduce water usage.
3. Collect used water for the garden.

Lab

Photo credit: faftech.wordpress.com

1. Dispose of hazardous / scheduled waste properly by collecting it in the container provided.
2. By-products (liquid) of the distillation processes can be repurposed for plant watering.

**Please consult your religious teacher.*

Information corners

Photo credit: desainrumahid

1 The information corners should be installed at strategic spots where people often pass by to increase visibility (eg. canteen).

2 A landscape corner with a variety of plants could be maintained together with the information corner for aesthetics and improve surrounding air quality.

Garden

1. Natural pesticides (homemade / commercial) is strictly recommended to avoid leaching of toxic chemicals into drains that flows into natural waterbodies.

2. A greenhouse can be built from used plastic bottles as a DIY project.

3. Used water can be used to water the plants.

4. The school garden could be used as the main composting site.

5. Garden waste added to the compost pile.

Benefits of practicing zero waste

ENVIRONMENT

- Reducing the need for more landfills and incinerators.
- Conserves resources and minimizes pollution.

SCHOOL

- Reduces waste and litter in school compound.
- Generates additional income as well as lower maintenance cost for school.

STUDENTS

- Build students' self-confidence through empowerment.
- Improves waste-management practices among students.

How to start?

SHORT-TERM PROGRAMME

- Set up a dedicated team (Green/Environment Club) with the support of dedicated school teachers/administrators/staff.
- Give exposure to students on best management practices that is applicable within school compound.
- Conduct a waste audit (for at least a month) to better understand the nature of waste from the school and therefore allocate club's priorities accordingly.
- Place recycling bins right next to regular rubbish bins. Make sure that the recycling bins are clearly labelled. Decide on a regular schedule of bin sorting and emptying.
- Adjust the program as needed while keeping it simple and straightforward.
- Conduct activity in a smaller scale (eg: Environmental Club students' activity once in every month).

LONG-TERM PROGRAMME

- Expand the current functional model to the larger school audience.
- Empower the students by exposing them in external programmes and competition to enhance their creativity to further implement best management practices.
- Work together with government agencies/corporates to get funding for activities.
- Get local communities/parents to join in activities in school.
- Share initiatives taken with the public via newsletter/social media.
- Nominate your school in relevant awards/recognition.

Programme Sustainability

ENTREPRENEURSHIP

Sell compost / excess vegetables and fruits and upcycled finished products to surrounding communities and re-channel profits into the Zero Waste programme for the:

- Maintenance of compost garden
- Beautify the school with more plants
- Repurpose any furnitures / facilities
- Support environment club activities

SPECIAL AWARD

SEKOLAH LESTARI

- Environmental champions recognition given to outstanding school in a form of a fund so as to sustain ongoing environmental management programmes.
- Highest award/recognition for schools in Malaysia by Department of Environment Malaysia (DOE) and Ministry of Education Malaysia (MOE).

For more information, visit:
ras.doe.gov.my/v2/sekolah-lestari-anugerah-alam-sekitar

SAYANGI SEKOLAHKU@3K

A collaboration programme by MOE, Ministry of Health Malaysia (MOH) and Dutch Lady Malaysia that aims to produce champions through the development of knowledge, attitude and practices that are sustainable in terms of hygiene, health and safety. The program also aims to build and nurture students to have fun and enjoy a clean, healthy and safe school environment.

For more information, visit:
www.sayangisekolahku3k.com.my

PERKISS

PerKISS is a nationwide school recycling contest by Solid Waste SWCorp in collaboration with MOE which encourages competing schools to accumulate the highest amount of recycled materials based on the 3R (creativity and composting) concept.

For more information, visit:
www.swcorp.gov.my/perkiss/intro/pengenalan.php

OTHER OPTIONS

FINANCIAL AND HUMAN RESOURCES

- Participate competitions organized by MOE together with other agencies/corporates
- Seek training for students for funding proposal writing to external funders e.g. corporate, international organisations to fund large scale school projects
- Invite nearby communities/parents to help out with zero waste campaigns or clean-up activities within the school boundaries

FOR MORE INFO

KLRIVER.ORG

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#rolpop5 #riveroflifekl