



Nine citizen proposals to improve household recycling in Singapore

A report by the #RecycleRight
Citizens' Workgroup 2019

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FRAMING THE PROBLEM: KEY FACTS ABOUT RECYCLING IN SINGAPORE

HOW MUCH WASTE DOES SINGAPORE GENERATE?

7.7 million tonnes

enough to fill 15,000 Olympic-sized swimming pools (2018). Our waste production has grown seven-fold over the last 40 years.

HOW MUCH WASTE DO SINGAPORE DOMESTIC HOUSEHOLDS GENERATE?

1.56 million tonnes

in 2018, **one third of which consisted of packaging waste**, including **single-use disposables** such as plastic bags and food packaging. This included **55% plastic packaging, 25% paper packaging**, and **20% other materials** including metal and glass.

BUT WE RECYCLE, DON'T WE?

Singapore's domestic household recycling rate stands at 22% (2018).

This is low particularly compared to the **74% recycling rate** in non-domestic sectors (which includes business and industrial sectors).



THERE ARE BLUE RECYCLING BINS ALL OVER SINGAPORE, DOESN'T THAT HELP?

40% of items deposited in our blue bins are not suitable for recycling. Problems include incorrect items being deposited, and food contamination.

WHY IS THIS IMPORTANT?

At Singapore's current waste production rate, our only landfill at **Semakau will run out of space by 2035.**

15 YEARS IS NOT A LONG TIME! WHAT ARE WE DOING ABOUT IT?

Singapore has launched the **Zero Waste Masterplan**. Amongst other things, the Masterplan includes a target to **reduce waste sent to Semakau Landfill each day by 30% by 2030**, to extend Semakau's lifespan.

SO WHAT DOES THIS WORKGROUP HAVE TO DO WITH ALL THIS?

The **#RecycleRight Citizens' Workgroup** and other forms of **citizen engagement** is one building block of Singapore's Zero Waste Masterplan.

SINGAPORE'S ZERO WASTE MASTERPLAN - & WHERE OUR CITIZEN EFFORTS COME IN

THE ISSUES OF RECYCLING AND SUSTAINABILITY ARE NOT JUST A PROBLEM FOR OUR GOVERNMENT, BUT AFFECT ALL CITIZENS. CITIZEN EFFORTS AND ENGAGEMENT IN CO-CREATING SOLUTIONS TO THESE PROBLEMS ARE HENCE ONE INTEGRAL PART OF SINGAPORE'S ZERO WASTE MASTERPLAN.

Zero Waste Masterplan to Achieve a Sustainable, Resource-Efficient and Climate-Resilient Singapore

Our Targets

- 1 Extend Semakau Landfill's lifespan beyond 2035
- 2 Reduce amount of waste sent to landfill per capita per day by 30% by 2030
- 3 By 2030, achieve a 70% overall recycling rate:
81% non-domestic recycling rate
30% domestic recycling rate



Sources & further reading:

- <https://www.towardszerowaste.sg/recycle-right/>
- <https://www.towardszerowaste.sg/zero-waste-masterplan/>
- <https://www.mewr.gov.sg/docs/default-source/default-document-library/grab-our-research/-kes-2019.pdf>
- <https://www.nea.gov.sg/our-services/waste-management/waste-statistics-and-overall-recycling>
- <https://www.nea.gov.sg/docs/default-source/media-files/news-releases-docs/cos-2018-media-factsheet-for-lca-study-findings.pdf>

OUR #RECYCLERIGHT WORKGROUP JOURNEY

WHAT GOES ON BEHIND THE SCENES OF A CITIZENS'
WORKGROUP? HERE'S A SNAPSHOT OF OUR JOURNEY:

4 Sep

Participants attend Parliamentary reading of Singapore's first [Resource Sustainability Bill](#), which is passed ([Channel News Asia](#), [MEWR](#)).

17-20 Sep

Participants visit Singapore's Material Recovery Facilities (recyclables sorting plants) owned by Colex, Sembcorp and Veolia ([YouTube](#)).



21 Sep

Workgroup commences (YouTube)

Opening remarks by Dr Amy Khor, Senior Minister of State for the Environment and Water Resources ([MEWR](#))

Common ground established through discussions and sharing on key facts and statistics of Singapore's recycling ecosystem and ongoing sustainability efforts



22 Sep

Project ideas proposed and groups formed

1 month

Groups roll out projects, pilots and prototypes

19 Oct

Group presentations on project outcomes.
Cross group sharing of feedback, refining and voting

20 Oct

Groups present to Dr Amy Khor, Senior Minister of State, and invited guests
Proposals submitted for consideration by the Ministry of the Environment and Water Resources
Workgroup closes

The #RecycleRight Citizens' Workgroup Proposals

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BLUE BIN & YOU

#RecycleRight Proposal 1

To raise awareness & relationship between the Blue Bin & You, through a national campaign

Team members: Chua Ming Xuan, Buffy Attenborough, Leon Traazil, Irene D'Orville, Low Shi Min

EXECUTIVE SUMMARY

To address the less-than-ideal recycling rates as well as to reduce the contamination in the Blue Bin, we examine how we can target a wider audience, what are the possible mediums, the messages we need to push forth and other considerations to push this further. Climate Crisis is real and it will affect all of us, we have to make a concerted effort to correct this – it's up to all of us. Our resulting document of ideas will seek to raise awareness & relationship between the Blue Bin & You, through a national campaign.

Our solutions include but are not limited to:

ADDRESSING AUDIENCES

- Lower Income Families
- Non-English Speaking
- Senior Citizens
- Domestic Helpers

MEDIA

- Radio (Open Talk & Experience Sharing)
- Infuse in Local Productions (FTA Channels)
- Newspapers (Chinese, Malay, Tamil)
- Potential Free Media Spaces (In & Around Housing Estates)

IMMEDIATE SOLUTIONS

- Events with Active Aging Committee
- Foreign Domestic Worker (Settling In Program)
- Office Heroes (Getting individuals to be Champions)

BLUE BIN & YOU *continued*

CONTENT

Before the Blue Bin

- What can be recycled?
- What must be cleaned and dried?
- Where are the Blue Bins?
- What Blue Bin? (For condos or landed property)

The Blue Bin

- A reminder of what can or cannot be recycled?
- How else to make a difference?

Beyond the Blue Bin

- What happens to items in the Blue Bin?
- What about bulky items?
- What about things that can't be placed in the Blue Bin? (Solutions to address)
- How else can I make a difference? (Beyond Recycling)



NURTURING THE NEXT GENERATION

#RecycleRight Proposal 2

To Instil and Cultivate Green Habits in Children

Team members: Najat Yusuf, Pavarthi, Jamie Tan Zixi, Angeline Kwong

OBJECTIVE

- To include a syllabus or topic in the **Character and Citizenship Education (CCE)** class for primary, secondary and pre-university.
- Creating a habit and awareness in our children with regards to the environment.
- To increase the household recycling rate beginning with changing the mindset and attitude of our younger children.

WHY

There is little or limited awareness on how as a person, a family unit, a student, a citizen of Singapore and the world, that one can be responsible in playing a role to be fully aware on the impact of the environment. It was often mentioned that “we want to nurture Singapore citizens of good character”, and thus, **to be caring and fully aware of the environment will also contribute to this holistic character development.**

VALUES IN ACTION (VIA)

Current examples of activities carried out in schools include befriending disadvantaged families, children, outings with elderly. What we also want to include is **incorporating green efforts as part of VIA**. And this can be, but not limited to; a beach/park clean up, separating items in the blue bin, doing weekly assembly talks and providing workshop classes for the younger children. Such activities can also include working with social service centric beneficiaries as well. VIA can either be implemented by school, teachers, or for the older children (upper primary or even secondary level)- by the children themselves. Students will then reflect on their environment efforts e.g. how they contributed to the environment, what is the greatest impact, how sustainable the efforts are, how they can further improve what else can they do.

NURTURING THE NEXT GENERATION *continued*

TARGET AUDIENCE

- MOE run schools; primary, secondary and pre-university levels.
- Teachers
- Students of all levels.

APPROACH

- Leveraging on the existing Character and Citizenship Education (CCE) curriculum to include a component on environment. Replicate these efforts to other schools
- VIA hours can either leverage on the existing hours e.g. social activities with beneficiaries with component of environment or 10 hours (½ of VIA duration) to include environment component specifically or an extra 20 hours dedicated to specifically environment.

OUR FINDINGS

Through our findings via meetings with three (3) exceptionally environmentally friendly schools and an online survey that garnered 79 responses from parents and educators, we learnt that:

- There are some schools that are more advantageous than others, and it really depends on the efforts that each teacher or principal make.
- School run campaigns are great, however they are not sustainable, as campaigns run for a certain duration only.
- There is a need to integrate current affairs regarding recycling/climate change/ environmental matters into their learning outside of their subject matters. Eg. science and geography. This can be done through debates, verbal discussion, reading comprehension passages, news articles, as well as expository writing.
- Teachers need to be a role model first. Encourage and motivate the children to be a green ambassador.
- Being aware of the environment should be part of an overall school culture, habit, and lifestyle.
- There should be minimum standards in “green” education at **all** schools so children are aware at a very early age and it becomes second nature to be mindful of the environment.

NURTURING THE NEXT GENERATION *continued*

OTHER RECOMMENDATIONS

- Sharing of good practices by schools who took part in NEA projects
- One stop portal for teachers, educators to have a portal to share resources
- Replicate these efforts to other schools
- Briefing for Principal and teachers to understand their needs (especially schools that are not actively environmentally friendly). Make it easy for them to adopt.
- Impose some guidelines e.g. yearly green audit.

CONCLUSION

Children are our future leaders. We envision all children to be an active contributor to society, who is able to work effectively in teams, exercise initiative, take calculated risks, is innovative and strives for excellence. **A concerned citizen who is rooted to Singapore, has a strong civic consciousness, is informed, and takes an active role to better the lives of others around him. Actively thinking about the environment and how their actions can make them a better person and citizen.** Teachers need to help shape their mind, change their attitude, and mould them so that **our children can think of their tomorrow.**



DABAORIGHT! MOBILE APPLICATION

#RecycleRight Proposal 3

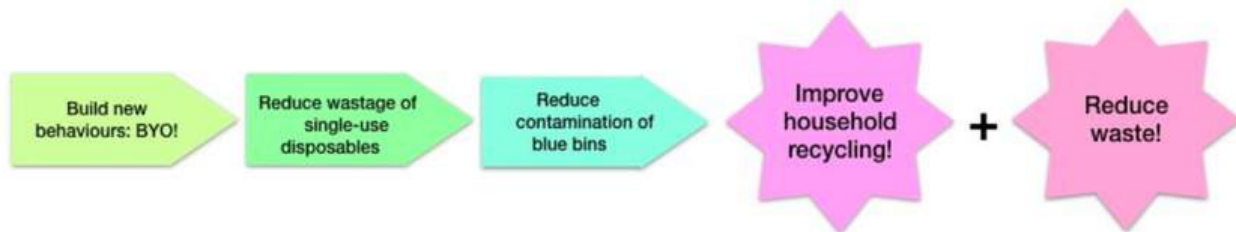
An initiative to encourage Bring Your Own (BYO) behaviour in Singapore

Team members: Hoo Tun Jiang, Jocelyn Pang, Lam Yimin, Lee Peilin, Rachel Chua & Yu Pei Fern

INTRODUCTION

“What made us start caring about the environment? How can we convince people who do not recycle to start?”

With this question in mind, our group #DabaoRight ** set out to nudge more Singaporeans towards pro-recycling attitudes and green practices. ** “Dabao” = to takeaway food!



OBJECTIVES

To reduce contamination of blue bins in Singapore through building Bring-Your-Own (BYO) behaviour.

We aim to encourage consumers to build new habits and shift away from the culture of single-use disposables, thereby reducing waste at the source and lowering the contamination rate of recycling bins caused by food waste.

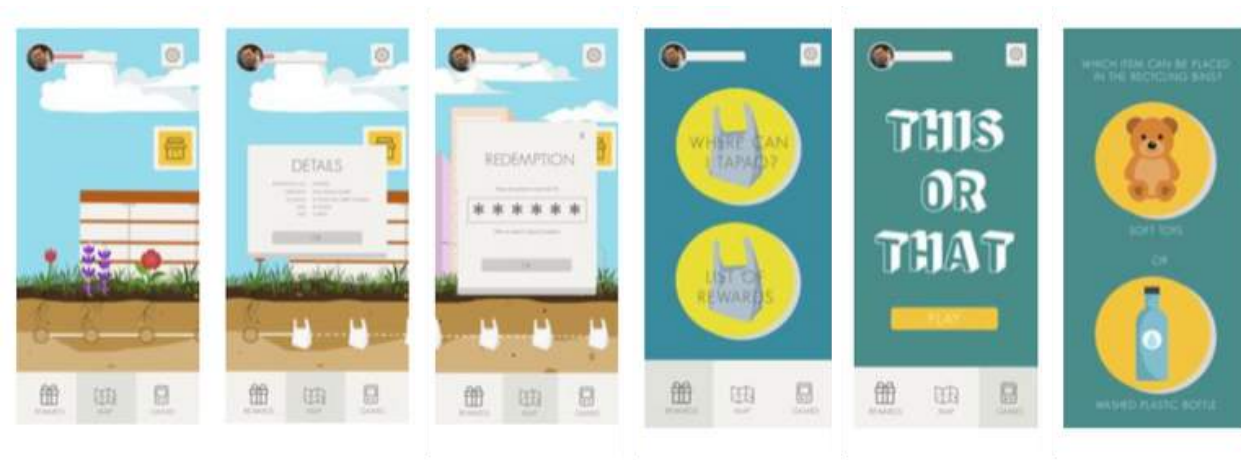
OUR SOLUTION: DABAO RIGHT! MOBILE APP

Too inconvenient to bring your own container when you dabao? Our Dabao Right! Mobile app gives you reasons to BYO! Receive monetary and emotional incentives at participating merchants. What's even better: you'll contribute to reducing usage of single-use disposables in Singapore!

We were inspired by how the Health Promotion Board's National Steps Challenge got Singaporeans to move! This got us thinking: why not apply the same logic to recycling?

DABAORIGHT! MOBILE APPLICATION *continued*

HOW IT WORKS



IMAGINE THIS! It's Monday, and you desperately want your morning coffee before heading in to work. You head to the coffee shop bleary-eyed, reusable cup in hand, and the barista asks, "Are you on DabaoRight?"

You've just downloaded it, so you open up the app on your phone and pass it to the shop staff, who keys in a redemption code for you. The little plastic-bag stamp at the bottom of the screen has grown into a flower! It may be Monday but your day sure looks good, as you get 50 cents off your order. What's more: you're just two stamps away from a bigger reward! It could be a five dollar voucher or an extra topping at your favourite salad place—check out the list of rewards available!

Dabao Right! also shows you a list of participating merchants, so you know exactly where to go when you need to Dabao your meals in a hurry. Track your journey through the trail of plastic bags to see where you've Dabao-ed, and the amount of single-use disposables you've saved!

DABAORIGHT! MOBILE APPLICATION *continued*

PHASE I (basic features)	Target Audience Working Adults Dabaos food most often Features BYO Tracker List of rewards and participating merchants Daily reminders to BYO Visual tracking of actions to provide emotional incentives
PHASE II	Target Audience Working Adults + Tertiary Students New Features BYO beyond food takeaways (e.g. grocery bags) Reward tiers for accumulated actions, similar to Grab Rewards Recycling games to test knowledge of what can and cannot be recycled + Leaderboard and challenges with friends Chatbot to provide advice on what can be recycled Upcoming "green" events
PHASE III	Target Audience Working Adults + Tertiary Students + Rest of Population New Features Broad inclusion of other reusable items (e.g. packaging-free food) In-app chats between members to build community Geo-targeted notifications of merchants AI recognition of recyclables Tie-ups with green companies

Who would use this app? — Our surveys

To assess feasibility and take-up rate of our app, we conducted two surveys over two weeks involving the key stakeholders: i) **Consumers** (close to 600 responses) and ii) **Merchants** (22 responses). Based on the results below, we are confident that there is support for DabaoRight! Mobile App.

Consumer survey: We found that **74.8%** of respondents buy takeaway at least 3x a week but only **14%** often/always bring their own containers. However, **65.3%** said they are likely/highly likely to bring their own containers if monetary incentives are provided. An additional **50.4%** said they are likely/highly likely to download a mobile app that encourages/incentivises BYO.

Merchant survey: **86%** of merchants said they are keen to participate in BYO programmes while **73%** are willing to use plastic-alternatives. 69% are willing to offer rewards including upfront cash discounts and items for those using the app. However, more than half of merchants surveyed raised their concerns that their current operations would be affected by the app. With this in mind, we designed the app's UX (all merchants need to do is key in a code on customers' phones) to ensure seamless flow of operations.

Have suggestions or comments on our app or how to Dabao Right?

Get in touch with us at dabaorightsg@gmail.com

TRANSPARENT RECYCLING BINS

#RecycleRight Proposal 4

Team members: Ten Chee Keat Shawn Evan, Zena Yong Si Hui, Lim Hong Tan, Lim Chwen Liang Chris, Cheong Kai Yuan, Koh Boon Huei Max

OBJECTIVE

To study different **design elements** and propose **new bin designs** that facilitate an **intuitive** and **conscious** recycling experience.

PROBLEM DEFINITION

40% of what goes into recycling bins cannot be recycled due to contamination from food or liquid waste. Recyclables that are contaminated by food or liquids cannot be recycled, rendering recycling efforts by others futile. In addition, there also often items inside the current recycling bins that cannot be recycled in the first place.

SOLUTION

Our group has decided to target the design of the current recycling bins to facilitate an intuitive and conscious recycling process. Through the redesign of the bin, we aim to achieve the following objectives:

1. Increase of public awareness about the process of recycling right
2. Reduce contamination of recyclables in recycling bins

TARGET AUDIENCE

Our identified target audience is HDB households, as they are the most prominent users of the blue recycling bin.

APPROACH

After research and consultation with experts, the design elements that we prioritised for the new recycling bin was the following:

1. **Transparency** - A transparent bin may make people more conscious of what they are placing into the bin, serving as a deterrence to those who wish to contaminate the recyclables.
2. **Eye-level notices** - Notices that are placed at a person's eye-level would catch people's attention and allow them to visualise what is allowed to be recycled with minimal effort..

TRANSPARENT RECYCLING BINS *continued*

3. **Tailored lids with deposit holes** - Specially-shaped lids to suit defined categories of recyclables will prevent people from disposing bulky waste that does not belong in the bin.
4. **Fixed Location** - A fixed location may become a landmark in the residential area and be a focus point for public education.

The group also considered technical constraints, current infrastructure and waste collection processes.

FINAL DESIGN RECOMMENDATION



NURTURE OUR-INFLUENCERS: IN-COMMUNITY INFLUENCERS FOR HOUSEHOLD RECYCLING

#RecycleRight Proposal 5

Team members: Sandy Yong, Ashari Ali, John Goh and Benjamin Mak

MEWR presented to us the challenge faced by Singapore to promote households to recycle at the RecycleRight Citizen workgroup workshop.

Our team consisted of four members from diverse background, sharing the common goal to create a solution to help solve the problem of 40% of recycling items collected from households that are contaminated due to improper use of the recycling bin.

We believed that by nurturing influencers, we could seek to seed, scale and sustain the “RecycleRight” culture within the community. Thus, our proposal entitled “Nurture our-influencers” focused on establishing an in-community structure that would continuously help grow influencers nation-wide. We wanted to reach out to leaders in the religious, corporate and secular community settings, to share our message and methodology on how to RecycleRight with them to cultivate the habit of recycling in their communities.

Our proposal incorporated three critical considerations: 1) **the potential for cross-district application**, 2) **incurs minimal costs** so that even non-profit organisations can adopt the programme, 3) **rides on existing local networks of people and resources to be able to quickly kick-start within a short-time frame and be sustained by local groups in for a long-term.**

With only four weeks to test-run our proposal to study its feasibilities and identify challenges, we figured out it would be more effective to start with potential in-community influencers by scouting for leaders in **religious** organisations, **secular community** organisations and **companies that we were familiar with**. Also, by focusing on these three groups allowed us opportunities to work with leaders who meet groups of Singaporeans regularly over time (i.e. members of the same mosque, residents of the same neighbourhood and employees of the same firm).

NURTURE OUR-INFLUENCERS: IN-COMMUNITY INFLUENCERS FOR HOUSEHOLD RECYCLING *continued*

We were encouraged by the strong support from in-community influencers. At Masjid Yusof Ishak, elders encouraged younger members and students attending religious class to learn about recycling and how they can adopt it at home. In visiting Xcel, we witnessed how supervisors were able to influence their employees to adopt household recycling techniques. At Potong Pasir CC and RC, the support of the local MP encouraged his grassroots leaders to attend our sharing and they were spurred to further share their message with other members of their neighbourhood.

We **successfully tested out our educational slides and games** to the youth, corporate management and staff members, grassroot leaders and RC members. Many participants took home with them a strong understanding of the target message: “**dry and clean**”, echoed within our slides and games. We also played a provocative game in two occasions and it was well-received with our intend and concept comprehended and assimilated by the participants. We also engaged some of the participants in discussions and interviewed a few to understand in greater depth, the challenges faced and supports required as recycling influencers.

To help us understand the effectiveness of different messages across different communal settings, we conducted surveys plus giving open-ended feedback option to ask participants what they thought were the most persuasive messages for household recycling. These surveys helped provide a **preliminary sensing which can be expanded on**.

We consolidated a few **crucial learning points** from the findings during the 4 weeks:

1. Semakau's lifespan was the strongest motivator to recycling.
2. Many participants did not know that recyclables must be clean and dry.
3. In-community influencers can spread the message to recycle right.
4. Gamification motivates participants and reveals areas for improvement.
5. Recycling should be promoted as part of everyone's life routines and influencers require easily available educational kit consisting of easy small steps that they can impart to their members to incorporate into their daily activities.

NURTURE OUR-INFLUENCERS: IN-COMMUNITY INFLUENCERS FOR HOUSEHOLD RECYCLING *continued*

After four weeks of working on our proposal we are convinced that Singapore can benefit from a supporting structure for influencers to ride on their existing program to spread recycling. MEWR could consider legislating for an Influencers' Committee to be a bridge between citizens and public agencies. The Influencers' Committee is meant to (a) identify and train **first-level influencers (i.e. recycling volunteers)** on appropriate household recycling techniques; (b) support first-tier influencers in implementing their outreach to **second-level influencers (i.e. existing community leaders)**; and (c) serve as a **long-term platform to host training and publicity modules** that influencers can use, as well as facilitate **annual audit and accountability for recycling training initiatives.** The committee could include **diverse stakeholders that have successfully incorporated recycling into their activities**, including representatives from People's Association/ secular community organisations; religious organisations; company representatives from different industries; non-profit organisations; and educational institutions. The Influencers' Committee functions are shown at **Figure 1.** The four quarters in Figure 1 are the four main points of contact that households interact with on a regular basis.

In conclusion, the nation needs to work together to reduce waste and increase recycling. To give it a boost from the start, various government agencies and leaders need to work together cohesively to setup a conducive environment for citizens and residents to recycle. Eventually as more citizens and residents become recyclers, others would be infused by the surrounding conditions and eventually be influenced to change. Eventually through time, maybe a long time but recycling will become a part of Singapore. Singaporeans will Recycle Right.



NURTURE OUR-INFLUENCERS: IN-COMMUNITY INFLUENCERS FOR HOUSEHOLD RECYCLING *continued*

Figure 1



E-KAMPUNG RECYCLING SUPPORT GROUP

#RecycleRight Proposal 6

Team members: Gauri Salunkhe, Ramesh Theva, Melissa Koh, Justin Chua, Valerie Koh

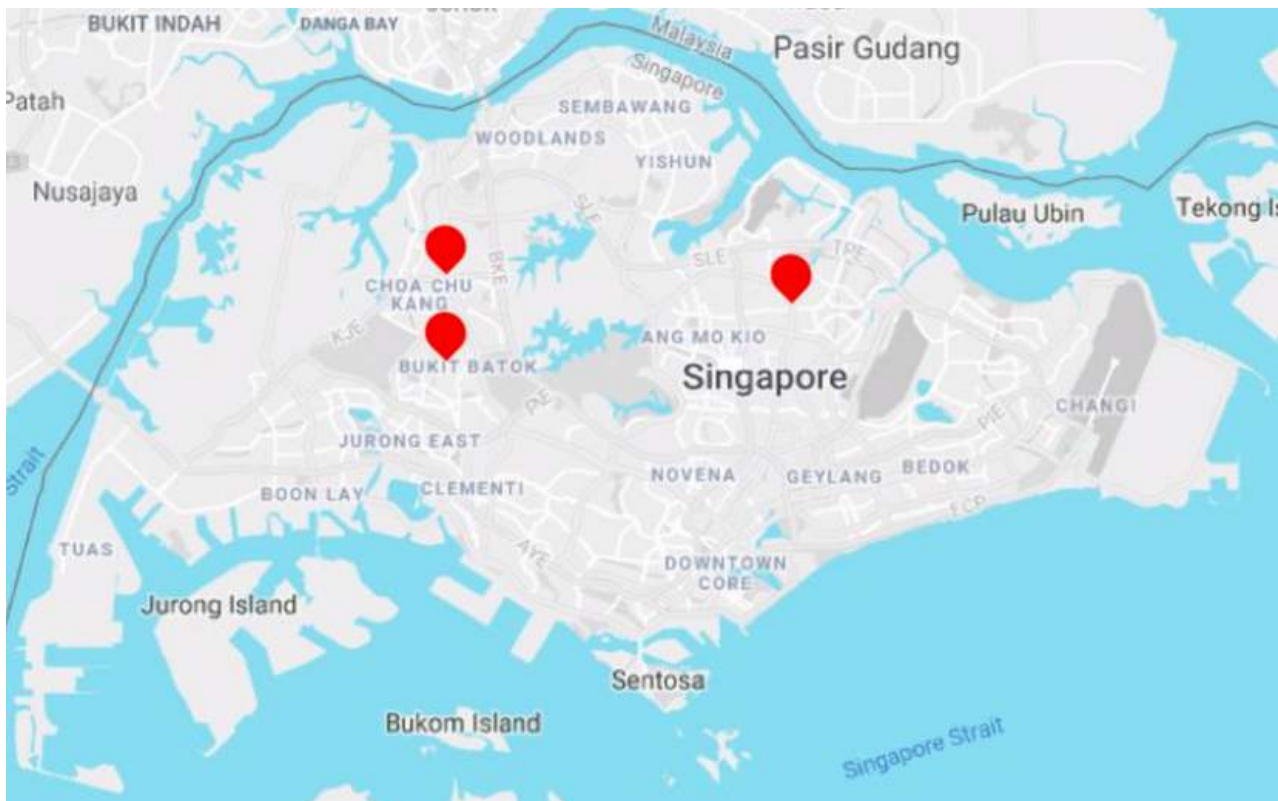
OBJECTIVE

The objective of this project is to achieve a fun, educational and engaging e-platform for residents in identified neighbourhoods. This platform aims to create awareness and encourage households to adopt correct recycling practices and #RecycleRight as a community.

TARGET AUDIENCE

The main target audience is residents of HDB estates as 80% of residents in Singapore live in HDBs (Source: [Housing & Development Board](#)). We identified 3 locations for our pilot test:

1. Sengkang Compassvale Helm
2. Bukit Panjang Zone 10
3. Bukit Batok West Blocks 325 and 329



E-KAMPUNG RECYCLING SUPPORT GROUP *continued*

STRATEGIES & TACTICS



The main strategy for the pilot test is to launch a neighbourhood Telegram or WhatsApp group for residents in the identified HDB estates. The idea is to allow neighbours to talk to and learn from each other on how to best recycle packaging, food waste, e-waste, etc. in their areas.

In doing so, we hope to create positive social influence within these HDB estates and build up a collective culture that recycles right.

The following are our main strategies for carrying out the project:

OUTREACH

- Leverage on existing technological e-platforms and educational material to bring the residents together and create awareness. With these currently effective e-platforms and material, the project can be quickly executed using minimal resources.⁵
- Reach out to potential subscribers through various offline channels such as roadshows, door-to-door outreach and community events. This allows us to gain trust with the community to get the residents on board. Note: Offline channels refer to channels that are not connected digitally (which involves the Internet).

E-KAMPUNG RECYCLING SUPPORT GROUP *continued*

MARKETING & BRANDING

● Adapt to community's perspective and needs as it is **"Not about us, it is about them"**. For example, if a community already has basic recycling practices/a neighbours' chat, the e-platform can be branded as a **"Recycling Support Group"**. However, if such background does not exist, it can be branded as a **"Neighbours' Chat"** where the focus on recycling is not in the foreground.

● **"Connecting Neighbours, Building Kampung Spirit"** is the main tagline. This would foster neighbourhoodliness among residents on the premise of adopting correct recycling practices.

ENGAGEMENT

● Create positive social influence within communities as neighbours inspire each other to recycle right through constructive communication.

● Inspire deeper engagement and insightful sharing through strategies such as polls and questions instead of pushing out curated content unidirectionally. This ensures sustainable engagement.

We identified **Telegram** as the key e-platform as, it



1. allows for a larger number of people to join;
2. allows moderators of the e-platform to hide personal mobile numbers of the group members, ensuring privacy;
3. includes features such as interactive polls to encourage more two-way dialogue; and
4. is a different e-platform from Facebook as there seems to be an over proliferation of Facebook groups.

LEARNING POINTS

Building Trust Organically Through Offline Events

Engaging residents in the face-to-face conversation creates bonding and trust. Through face-to-face conversation, resident will be more aware of their recycling rights efforts. In order to sustain their recycling efforts, the residents are encouraged to subscribe to the Telegram chat group.

On the e-platform, there will be periodic updates of their residential area's recycling events. Residents already on the e-platform could invite neighbours, friends and relatives to participate in the residential recycling events.

E-KAMPUNG RECYCLING SUPPORT GROUP *continued*

There are a population of residents who are not recycling that can be encouraged in the recycling efforts. Residents who are already in the recycling group can encourage others who do not recycle to attend the community events and learn more about it. Thereafter, these residents could subscribe to the Telegram group to learn more about the recycling efforts in the community.

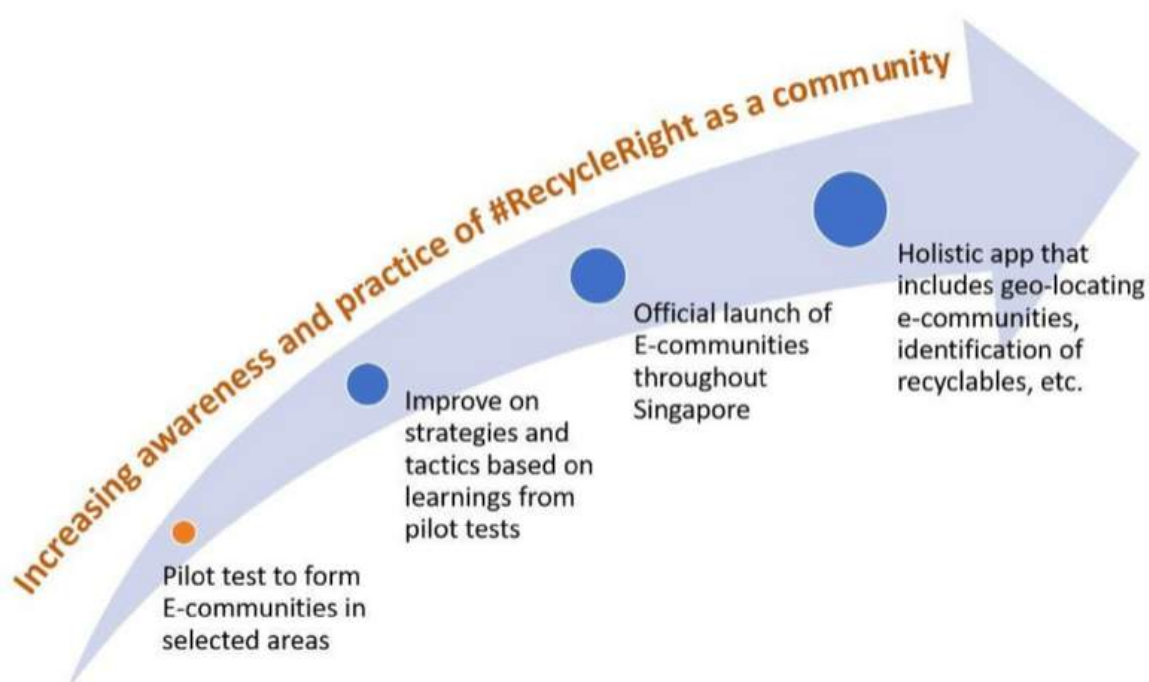
Using Community Champions as Catalysts in the Community

Community Champion in the recycle right effort forms a vital catalyst in the community in the recycle right efforts. The Champion could invite residents to recycle right community events. As the Champion is more aware of the resident and their efforts, the content posted in the Telegram group would create high impact on the recycle right efforts.

Moving Recycle Right to the Foreground

Through the community events and e-platform, the residents will be more aware of the recycling efforts. Residents will then be able to fully make use of the resources made available in the Telegram group to be kept up to date on the recycling efforts in the community. Resident could also post questions/queries on how and what could be recycled.

RECOMMENDATIONS TO MEWR / MOVING FORWARD



E-KAMPUNG RECYCLING SUPPORT GROUP *continued*

Based on the pilot tests conducted (refer to orange dot on the above diagram), we have identified the following recommendations to upkeep & expand this program beyond the project timespan:

Interim Plan: Improve Strategies and Launch more E-communities in Singapore

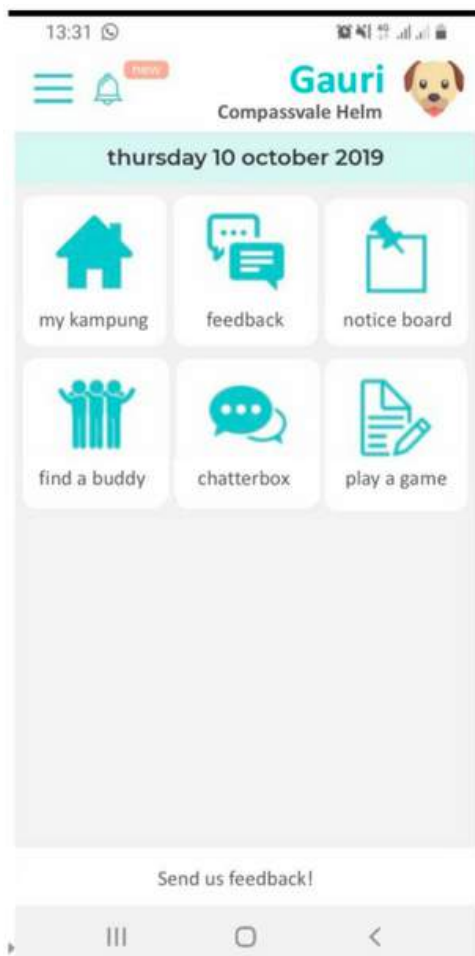
- Explore collaboration with other ground-up organisations to encourage participation of their residents in the e-platform as part of the strategy of “**Connecting Neighbours, Building Kampung Spirit**”.
- Build up at least 50 members on the e-platform to pioneer the Recycling outreach & support.
- Function as a bridge between online platforms and offline events.
- Participate in more face-to-face events organized by the community to encourage more sign-up and participation in the e-platform.
- Cultivate the understanding & ability of the residents to be able identify recyclables from non-recyclables in an interactive way.
- Encourage interaction and engagement among residents in e-platform on matters related to recycling right instead of single-sided contents sharing.
- Have e-platform in multiple HDB estates

Long Term Plan: Holistic App to expand and educate more people to recycle right

- Hand-over the Recycling Support e-platform to Community Champions to continue the sustainability of the platform.
- Convert existing e-platform into a more comprehensive application that is more relevant & pragmatic (Figure 1). This app can include features such as
- Consolidate all community chats on a single app to allow people to find their estate’s e-community easily
- Geo-locate like-minded residents to start events or initiatives collectively
- Gamify recycling right content, e.g. quiz people on what is recyclable and what is not.

E-KAMPUNG RECYCLING SUPPORT GROUP *continued*

Figure 1



CONCLUSION

In conclusion, the team has laid the foundations to the idea of setting up a fun and engaging e-platform that serves as a Recycling Support Group in the past 4 weeks. Through ongoing collaborations, such as that with Northwest CDC, the team aims to reach out to more residents and hopefully germinate the habit to recycle right.

DEVELOP 6R INTEREST GROUP @ PILOT BLOCKS

#RecycleRight Proposal 7

Team members: Biju Abraham Mathew, Ng Zhong Yi, Won Tzyy Ya, Viswam Kanduri, Karen Tan, Luwen Koh, Teji HS

PROJECT VISION & MISSION

Vision

To spread awareness, educate and empower citizens in public housing estates to #RecycleRight by building on current recycling infrastructure and take ownership for their health and a healthy environment.

Mission

Form an Interest Group to adopt the 6R PRACTICES with the appropriate facilities in each block which will enable residents to have ownership of their waste disposal process and sustain Singapore's vision to attain ZERO WASTE Status, thereby reducing the deposits into Semakau Landfill and extend its life beyond 2035:

6R'S

- **Reduce** - Use only what you need and buy accordingly by prior planning.
- **Reuse** - Re-use things for the same or new purpose, Buy accordingly for long term usage.
- **Recycle** - Convert waste into useful products - paper, plastic, metal, glass, cloth, food waste, electronics, electrical, dispose of contaminated items separately eg : into chute / blue bin.
- **Repair** - Repair and reuse, if possible, before discarding.
- **Refuse** - Decline single use plastics or reduce usage, refuse to buy products which may affect family, company, environment.
- **Repurpose** - Upcycle to a useful product probably for a different purpose, convert to art & craft, donate, sell.

PROJECT DURATION

Block visits and activities across 28 September to 20 October 2019

DEVELOP 6R INTEREST GROUP @ PILOT BLOCKS *continued*

Pilot Blocks

1. Block 327, Jurong East Street 31, Singapore 600327 - "Block A"
2. A selected block in Toa Payoh, "Block B"

In the above 2 Blocks, Waste Disposal Facilities prior to the MEWR Project were as follows

- Blue commingled recycling bins were located in public spaces outside the void decks of these blocks
- General waste chutes were located in each household's kitchen
- Waste disposal for St. Luke's Daycare (15 bags / day and waste from passerbys were facilitated via green bins located at void decks)

STRATEGIES AND PROCESSES

1. Took approvals and requested for support and partnership of relevant authorities and departments (Town Councils, Zonal RC and Community Centres) to successfully implement our project at pilot blocks.
2. Actively engaged residents to educate and increase their awareness on the importance of 6R's through verbal - face to face, electronic media (lifts), posters, educative literature/ circulars, to improve their recycling knowledge to reduce contamination from 60% to 0%, and take ownership for better health and environment.
3. Test different recycling setups at pilot blocks:

For the first pilot Block A - 327, the team created a common collection / disposal point at the block void deck area which had high visibility to residents, because of proximity to mail box point & lift lobby , and displayed several repurposed items for the residents to have an easier understanding

- a. Provided Residents with options to dispose recyclable waste in separate bins to reduce food contamination of recyclables.
- b. Permitted Waste collectors and others to access and clear items in the bins thus giving them an avenue for earning an income.
- c. Monitored bin areas to prevent littering, contamination.
- d. Sorted out good items and displayed to ensure easy access for needy.

DEVELOP 6R INTEREST GROUP @ PILOT BLOCKS *continued*

For the second block (Block B), the team planned to place a recycling bin in the lift lobbies of the three floors of the block, and paste educational posters related to appropriate usage of recycling bins to improve the recycling process. The group also planned to place smaller bins closer to the residents at the lift lobbies. This would increase the convenience of recycling and limit potential contamination to the floor level instead of the block level.

4. For both blocks, the team engaged residents via various methods including personal interaction, electronic media at lifts, posters, information leaflets and surveys to understand their recycling habits and knowledge.
5. For Pilot Block A – 327, the team also distributed free recycling bins to 22 willing residents, for their basic segregation of waste in their residence prior to disposal.
6. For both pilot blocks, the team conducted a survey to understand the awareness levels of the residents.

We varied the design of our setups in the two pilot blocks, based on layout and residents' requirements. Conducting an initial survey enhanced our understanding of the optimal setups required.

For various reasons, the actual pilot at Block B was eventually not implemented. Our group however gleaned valuable learnings from the initial research and engagement completed in designing the setup for Block B.

OUTCOMES AND OBSERVATIONS

We identified several possible reasons for the low recycling rate and high contamination rate:

1. The blue recycling bins are not accessible as they are not located at convenient points for disposing recyclable waste nor is it easily visible.
2. Since the blue bins are located in the common area, residents and passerbys discard contaminated waste into the blue recycling bins out of convenience.
3. The infographic posters on the blue bins are too difficult for some residents to read and understand, hence they do not recycle correctly and contaminate the blue bin contents.
4. Design of the openings to blue bins allows deposit of non recycling waste and lack of segregation.

DEVELOP 6R INTEREST GROUP @ PILOT BLOCKS *continued*

5. Lack of segregated bins to deposit.
6. Lack of collection points to deposit reusable items.
7. Residents not being aware of the 6Rs especially how to repurpose.
8. Most residents were unable to connect with waste collectors, organisations etc which resulted in waste dumping into common bins.
9. Most residents not having access to the latest updates related to environmental waste management.
10. Lack of composting points
11. Some residents do not want to support the recycling process for their own reasons.

LEARNING POINTS

1. The residents were happy and highly cooperative and supportive of the initiative.
 - a. The team successfully engaged the majority of the residents in both blocks. For Block A, the team visited an estimated 80% of units. For Block B, the team successfully engaged 94% of the appointed floors.
 - b. For Block A, 65% were made aware of the 6Rs and RecycleRight issues, and 30% (22 units) started practicing appropriate waste disposal and requested for home recycling bins.
 - c. For Block B, the team engaged 88% of the units on survey responses.
2. Having smaller bins or segregated bins helps to contain contamination, thus lowering contamination and improving the overall repurpose / reuse rate. Residents are hoping to have the option again.
3. Our results at Block A provides ample evidence of the process required to be implemented to improve the recycling rate. Hence, conducting a waste assessment of each building type is important to determine the right strategic strategy especially the process of placement of bins and messages to nudge residents to RecycleRight.
4. Local municipal authorities' involvement is important, particularly in supporting the strategic placement of media material and recycling infrastructure.
5. Giving access to the needy allows them to take items for their own benefit, as well as to clear items to reduce quantum delivered to facilities which may face problems to export waste items.

DEVELOP 6R INTEREST GROUP @ PILOT BLOCKS *continued*

FURTHER RECOMMENDATIONS FOR MEWR'S CONSIDERATION

1. Consider setting up neighbourhood programs spearheaded by local 'recycling champions'. Champions can conduct personal engagement on the ground with the residents, which is critical in obtaining resident buy-in to take ownership. This gives residents an emotional attachment to the importance of recycling, and also allows champions to educate each household's misconception on recycling.
2. Conduct a waste audit in each common type of HDB building to pilot different modifications to the current recycling infrastructure, or trial alternative infrastructure.
3. Bring emotional messaging to outdoors and public campaigns, but conduct education (via the recycling champions or informative labels on the home bins) on the specifics of recycling right indoors, where families are segregating the recyclables and can refer to these materials at their leisure.
4. Influence large commercial organisations to support the recycling ecosystem and continue to support and fund those RecycleRight programs to reach self sustainability.
5. Lastly, we believe that similar programs will achieve greater impact with MEWR and NEA driving such programs at a legislative level.

APPRECIATION: For successful implementation of the Project

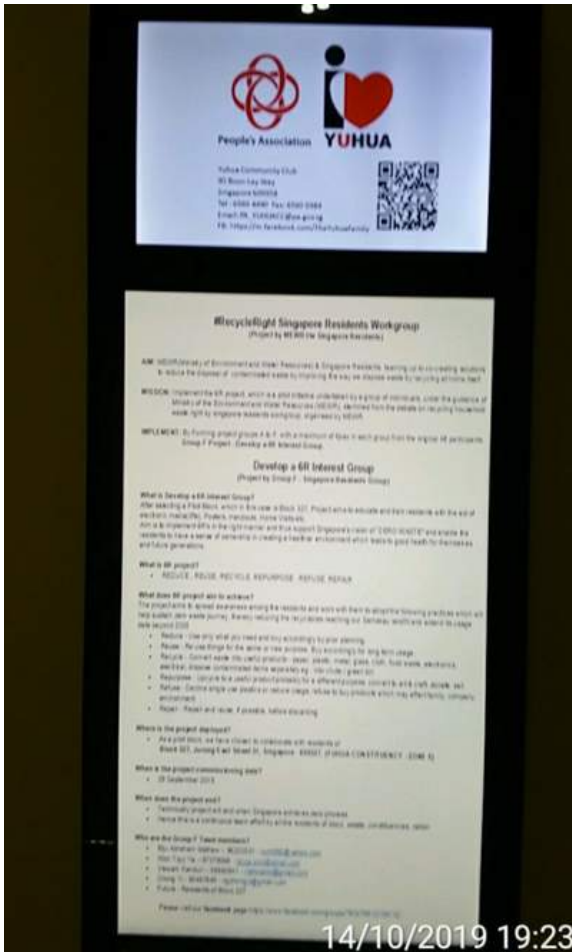
1. Ms. Grace Fu Hai Yien, MP for Yuhua Constituency, Minister of MCCY
2. Mr. Kam, GM & Mr. Masud, Manager and their team of cleaners
3. Ms. Jan, Constituency Director & Ms. Jega, Manager Yuhua CC and their team
4. Mr. Thomas & RC Team, Yuhua Zone 5
5. Supportive Residents of Pilot Block 327, Management and staff of St. Luke's @ Block 327 & Block B
6. Mr. Aslam Baig, IAMA Marine Singapore for all project poster designing
7. Mr. Faheem Hurzuk, MD of IAMA Marine for Poster Printing

For more details, check out our Facebook page @ <https://www.facebook.com/groups/783479612108112/>

DEVELOP 6R INTEREST GROUP @ PILOT BLOCKS *continued*



DEVELOP 6R INTEREST GROUP @ PILOT BLOCKS *continued*



14/10/2019 19:23



DEVELOP 6R INTEREST GROUP @ PILOT BLOCKS *continued*



FOOD WASTE TO ENERGY

#RecycleRight Proposal 8

Team members: Baron Yeo, Soh Soon Heng, Lee Si Ping, Marcus Ng, Jeksen, Chen Ching Wei

THE FOOD WASTE BACKSTORY

Food waste is the second largest waste stream disposed of for incineration in Singapore. According to NEA figures, 50% of that waste comes from households. There are 1.3 million households in Singapore; which means 1.3 million homes, yours and ours, are throwing out bags of kitchen waste almost every day. All of that is going straight to our sole landfill, Pulau Semakau, after incineration. Pulau Semakau is running out of room at a rate faster than projected.

We have to act with some urgency by addressing the issue at its source - in our kitchens. No matter how mindfully we shop and prepare meals, there will always be food scraps and food waste to throw out. Food waste can be converted into energy in the form of either compost to enrich garden soil, or into biogas that can be converted into electricity. In short, it is a form of treasure, not trash.

To divert food waste from landfill, we first need to capture it. This would require a household to separate its food waste from general rubbish, and send the waste to a place where it can be recycled. However, the rubbish chute - an inspired addition to residential blocks back when we needed an orderly and convenient way to dispose of our household rubbish - has unwittingly created an "anyhow throw" mindset over the years. Our team feels this instant disposal mindset could be a key roadblock in getting households to take the new step of segregating their food waste.

THE SEGREGATION EXPERIMENT

To see how open Singaporeans are to the idea of segregating their food waste, we door-knocked in an HDB block in Jurong, and managed to entice 18 households, from Malay, Indian and Chinese backgrounds, to separate their food waste for 7 days. We gave each a container and some biodegradable bags, and asked them to leave the food waste just outside their doors between 8pm to 8.30pm every night.

FOOD WASTE TO ENERGY *continued*

THE FINDINGS

Every night, we visited the block, collected the bags and weighed them. We were interested in tracking voluntary action and frequency. After 7 nights, here is what we discovered:

- 50 to 70% of households separated their food waste every night and left it outside for collection, without any prompting from us - less resistance than expected
- 100% of bags collected contained pure food waste - the participants were able to recycle correctly based on our verbal instructions. No info sheets were given out.
- Some households missed the collection time and took the trouble to keep their food waste for the following night. They also took the trouble to inform us.
- Putting a human face to the collection process seemed to build trust, respect and a willingness to engage. As the participants came to know us by sight, they told us it was no trouble to separate their food scraps every day. Many said they know it's for a good cause and indicated they were willing to continue to do it.
- Some households' perception of the amount of food waste they generate per day did not match the actual amount they threw out (thought was less, but was more).

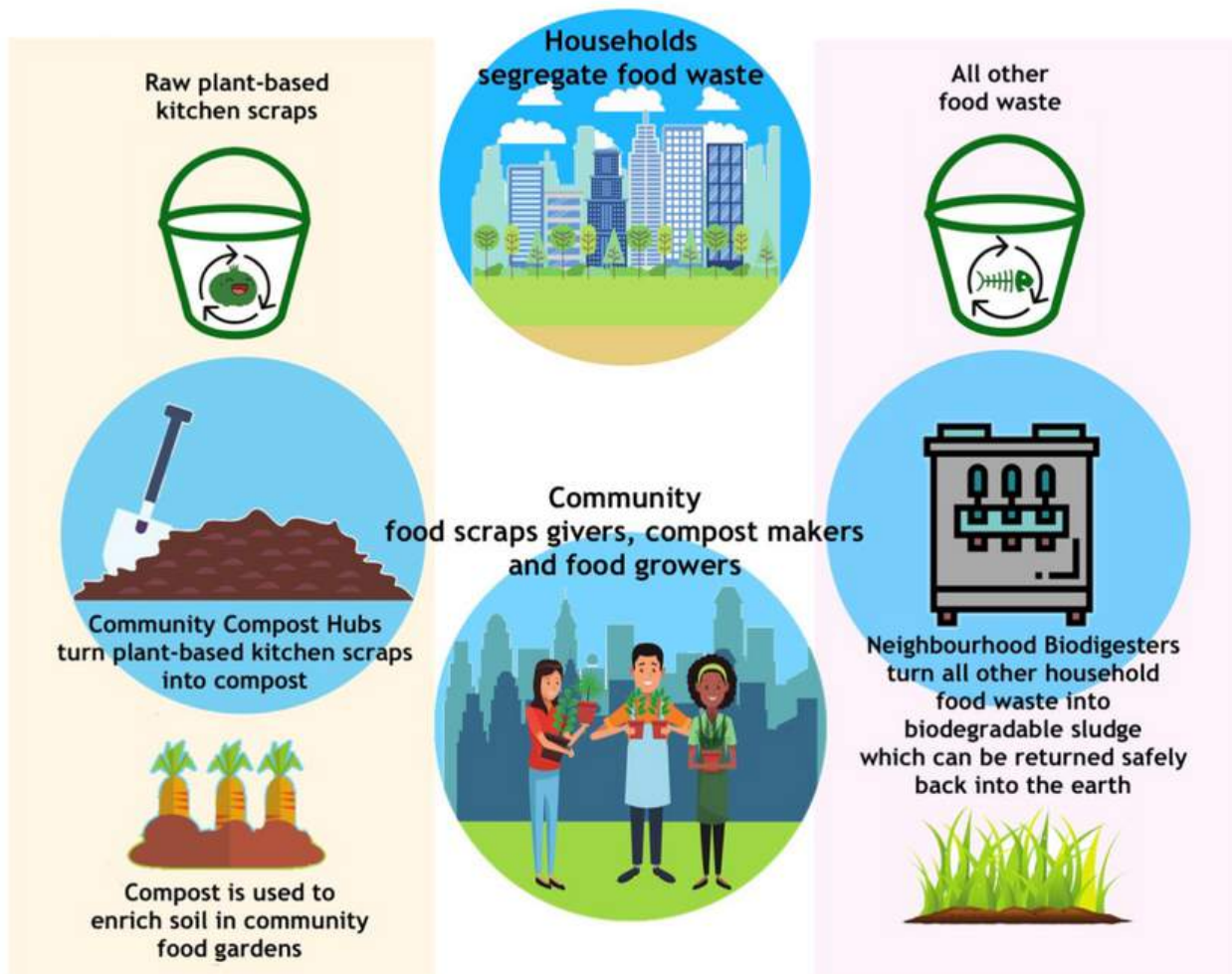
EXPLORING WAYS TO RECYCLE FOOD WASTE

Encouraged by the outcome of our segregation experiment, the team embarked on a quest to find out how food waste can be realistically recycled in Singapore. We visited the Ulu Pandan water reclamation plant, some schools (Elias Park Primary, Methodist Girls' School, National Junior College), a handful of community food gardens (in Bukit Batok, Pavilion and Simei), and a mall (Far East Square). The unifying factor behind these disparate places is that they collect food waste and recycle it via natural composting/vermicomposting, or mechanical biodigestion, with convincing success.

OUR RECOMMENDATION

Based on our findings, the Food Waste to Energy team is putting forward a solution which we feel is deployable in Singapore today. We envisage a Singapore where food waste is segregated by each household into plant and non-plant types, and recycled accordingly (see diagram on next page). We are in the process of seeking funding to launch trials to take our vision to the next step: create Compost Hubs and Neighbourhood Biodigesters.

FOOD WASTE TO ENERGY *continued*



A NATIONAL DEPOSIT & RETURN SYSTEM (DRS) FOR BEVERAGE CONTAINERS

#RecycleRight Proposal 9

Team members: David Lau, Lee Chee Huei and Kathlyn Tan

This is a brief write-up of our proposal to MEWR for the #RecycleRight Citizens Workgroup. Thank you to all our family members and colleagues who assisted us during our two-day door-to-door exercise, as well as the experts, store managers, NGOs and residents who contributed their time and effort.

OBJECTIVES

The primary objectives of our proposal are:

- To increase the household recycling rate by motivating consumers to recycle their used beverage containers. This includes but may not be limited to **glass/plastic bottles and aluminum cans**;
- Reduce the contamination of recycling bins from liquids; and
- Reduce the leading cause of [marine debris](#) in Singapore. Note: Plastic beverage bottles (less than 2L) make up 14.32% of all marine trash locally according to Dive Against Debris® survey data ([Project AWARE, 2018](#)).

WHAT IS A DRS?

DRS' for beverage containers have been implemented effectively around the world in order to increase household recycling rates; 93.5% of all PET bottles are recycled in Germany and 95% of all PET bottles recycled in Norway as mentioned [here](#). Similar schemes have also been rolled out in regions like Australia, select states of the US, UK, Canada, Denmark, Hong Kong, Lithuania, Czech Republic and others. For more information about what some of these countries have done, you can visit this article [here](#). Singapore does not currently have one in place.

The proposed system works as follows; the consumer is charged the price of the beverage (as usual) in addition to a deposit related to the beverage container. After consumption, consumers return empty containers to claim back their deposit. Such schemes are typically established through legislation passed by state or national governments and may be administered by a government agency or a third party. A visual representation of the

A NATIONAL DEPOSIT & RETURN SYSTEM (DRS) FOR BEVERAGE CONTAINERS *continued*

consumer's experience can be found [here](#). While there are common methods to conduct a DRS, the team would like to emphasise that **the container collection and deposit refunds can be processed through various methods**; for instance, manual (e.g. at shops, community centres, door-to-door services) or automated (e.g. reverse vending machine); and via e.g. cash, credit or donated to charities. Local infrastructure and culture should be evaluated before deciding on the most effective methods.

OTHER BENEFITS

In addition to dramatically increasing the recycling rate of beverage containers, other benefits include but are not limited to the following:

1. Puts a value to the recyclable materials, also encouraging informal collection;
2. More sustainable than incentives;
3. No financial burden to the consumer;
4. Raises environmental awareness and creates a recycling culture; and
5. Results in improved quality of recycle.

OUR FINDINGS & RECOMMENDATIONS

Through our online and face-to-face surveys with 992 respondents of varying ages, we found that even though only 67% of respondents recycled regularly, 95% would be agreeable or neutral to the implementation of a DRS in Singapore i.e. 69.8% strongly agree, 19.1% agree and 6.1% are neutral. As such, based on the success of DRS' in other countries and local reception based on our surveys, the team supports the implementation of a DRS in Singapore and recommends the following:

- There must be sufficient and convenient collection points available;
- Refunds must be tangible (preferably cashless; e.g. EZ-link credit or cashcard);
- It should be rolled out gently with an incentive-based transition phase;
- Collaborations with other workgroup team projects or existing campaigns should be considered to introduce and explain the DRS, as well as continue educating consumers about reducing unnecessary waste and bringing their own reusables;
- Traditional DRS models should be adapted to our local context and studied in detail prior to implementation;
- The process and system should be as transparent as possible to encourage accountability; and
- That in the long term, investments in local infrastructure should be made to enable local recycling of materials without the need for exportation.

ENDNOTE



The Ministry of the Environment and Water Resources (MEWR) will be providing feedback on the nine Workgroup proposals in end November.

Meanwhile, in addition to the proposals, the Workgroup has created new awareness and communities within which recycling and waste management solutions can continue to be formed. For those involved, it is another step in our journey of active citizenship and co-creating solutions to sustainability issues in Singapore.

We would like to thank the Ministry of the Environment and Water Resources (MEWR) for initiating the Workgroup, and all invited speakers, community leaders and organisations who have supported the Workgroup with their time, resources, feedback and participation in the projects.

Published November 2019
By the #RecycleRight Citizens' Workgroup 2019

ANNEX

MEDIA INTEREST GENERATED BY THE #RECYCLERIGHT PROPOSALS AND GROUPS' ONGOING WORK



Channel News Asia

9 recycling ideas proposed at final session of citizens' workgroup (20 October 2019)
<https://www.channelnewsasia.com/news/singapore/9-recycling-ideas-proposed-at-final-session-of-citizens-12018932>



Public proposes fresh ideas to recycle right



The Straits Times

Public proposes fresh ideas to recycle right (21 October 2019)
<https://www.straitstimes.com/singapore/public-proposes-fresh-ideas-to-recycle-right>

ANNEX *continued*

THE BUSINESS TIMES

LIFE & CULTURE

ALL NEWS WEEKLY BREAKING TODAY'S PAPER LIFESTYLE OPINION GARAGE SME ASEAN WEALTH HUB



HOME LIFE & CULTURE

GIVING BACK

Putting their heads together to think green

Five teams pitch climate action solutions for funding of up to S\$70,000 from #OCBCCares Environment Fund to further scale their projects

The Business Times

#OCBCCares Environment Funding for #RecycleRight Workgroup member Chen Ching Wei's food composting group (7 November 2019)

<https://www.businesstimes.com.sg/life-culture/putting-their-heads-together-to-think-green>



continued

