



SUSTAINING THE SUSTAINABILITY



Dr. C. S. Tan, PhD (NTU Singapore), B. Eng (UM)

- Co-founder, Terra Phoenix. Inventor – iCYCLE Solution, Internet of Waste Thing™. (2016 – present, paid up capital USD 700k),
- Associate Professor, Multimedia University (2011 – present),
- Recipient of China 330 Talent Program, 2019, ShaoXin city,
- Lead drafter, technical code for scheduled waste management in base station, Malaysia (2019),
- Lead drafter, technical code for retrofit light bulbs (2019),
- Fulbright Scholar, USA (2012),
- Research Associate, Colorado State University, USA (2012-2014),
- Co-authored text book: Applied Engineering Failure Analysis.
- > 30 peer reviewed journal papers ,
- Schlumberger (Drilling and Measurement) (1998 – 2001),
- 6 patents filed, 1 granted.





Although completed in July 2016, the new incinerator in Cameron Highland was ordered to shut down, but “test run” again in 2019.





The Pangkor Island incineration plant is located in Teluk Cempedak and is capable of combusting up to 20 tonnes of municipal solid waste a day.



CURRENT STATE OF CULTURE AND MENTALITY



Just burn, solve it fast.



Don't care, worry about this later.



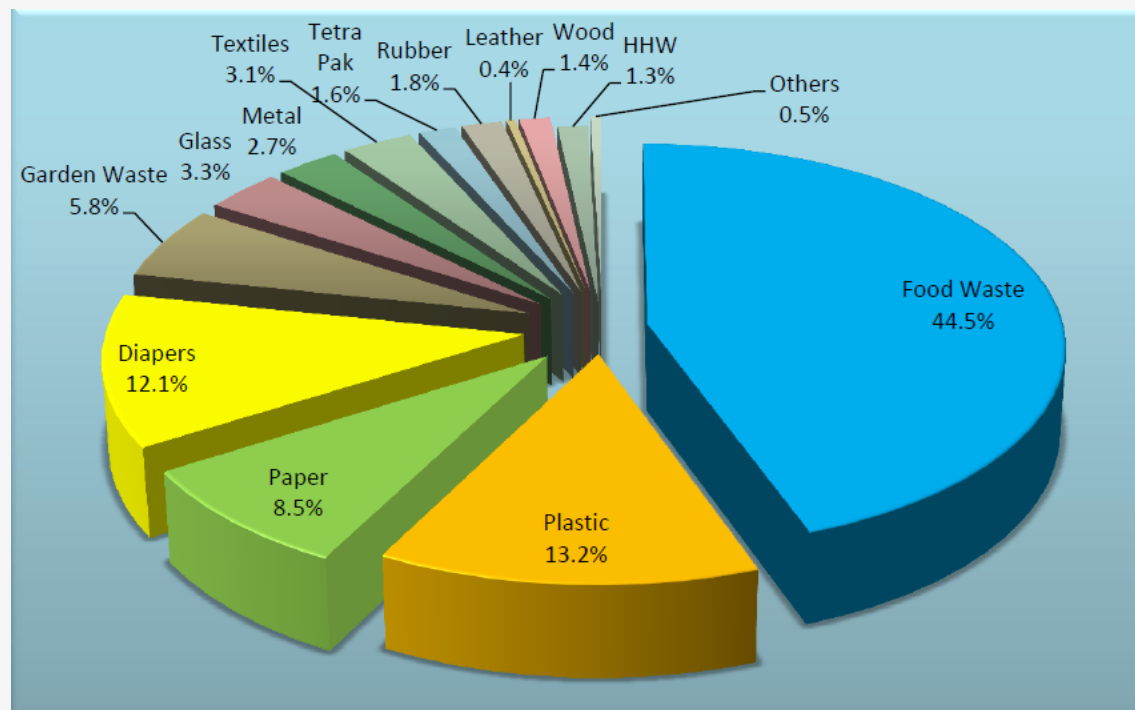
Dump site by government



It is not me, I did not do that!

Example of Reality Mismatch to Expectation

- Typical answers heard by iCYCLE team:



Let the collector make the money and take them all!

- But the sampled collection in landfill are still full of plastics, papers, etc
- Funny thing is: no aluminium cans there
- Those recyclable with no value is at the size of 46% of 38000 ton a day.

Typical Recyclers do not take so much of recyclables, most of them are still going to landfill!



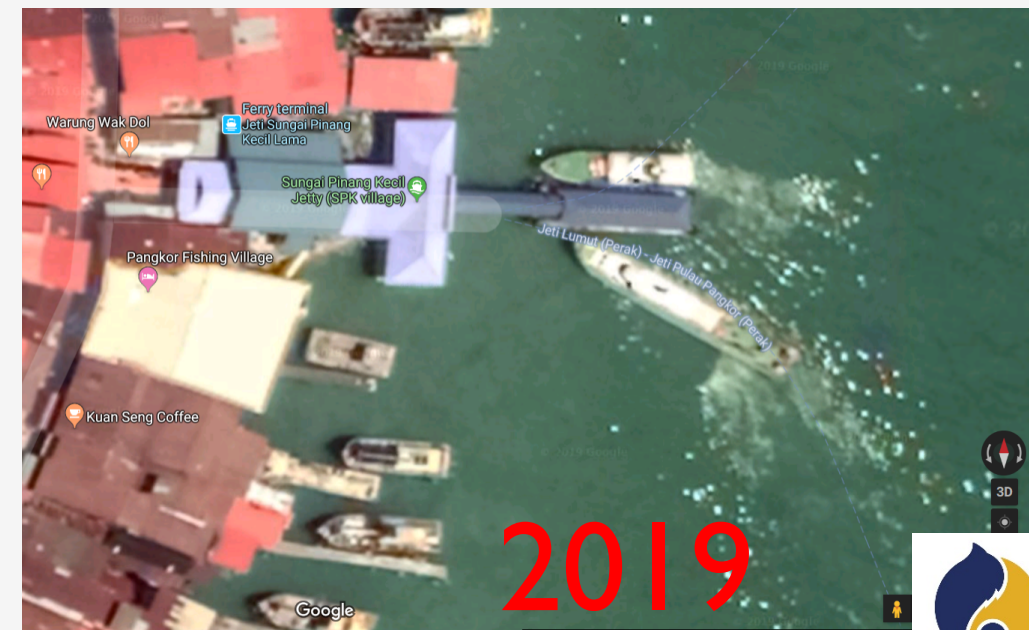
<http://www.icycle-global.com/2017/07/11/episode03/>

<http://www.icycle-global.com/2017/07/11/episode02/>

<http://www.icycle-global.com/2017/07/11/episode04/>

<http://www.icycle-global.com/2017/07/11/episode07/>

https://www.youtube.com/watch?v=_kHrkbPmcEM



2014



Example of Coastal Recovery Program

<http://www.icycle-global.com/2017/07/11/episode03/>

<http://www.icycle-global.com/2017/07/11/episode02/>

<http://www.icycle-global.com/2017/07/11/episode04/>

<http://www.icycle-global.com/2017/07/11/episode07/>

https://www.youtube.com/watch?v=_kHrkbPmcEM



不知道多少年後會變成這樣

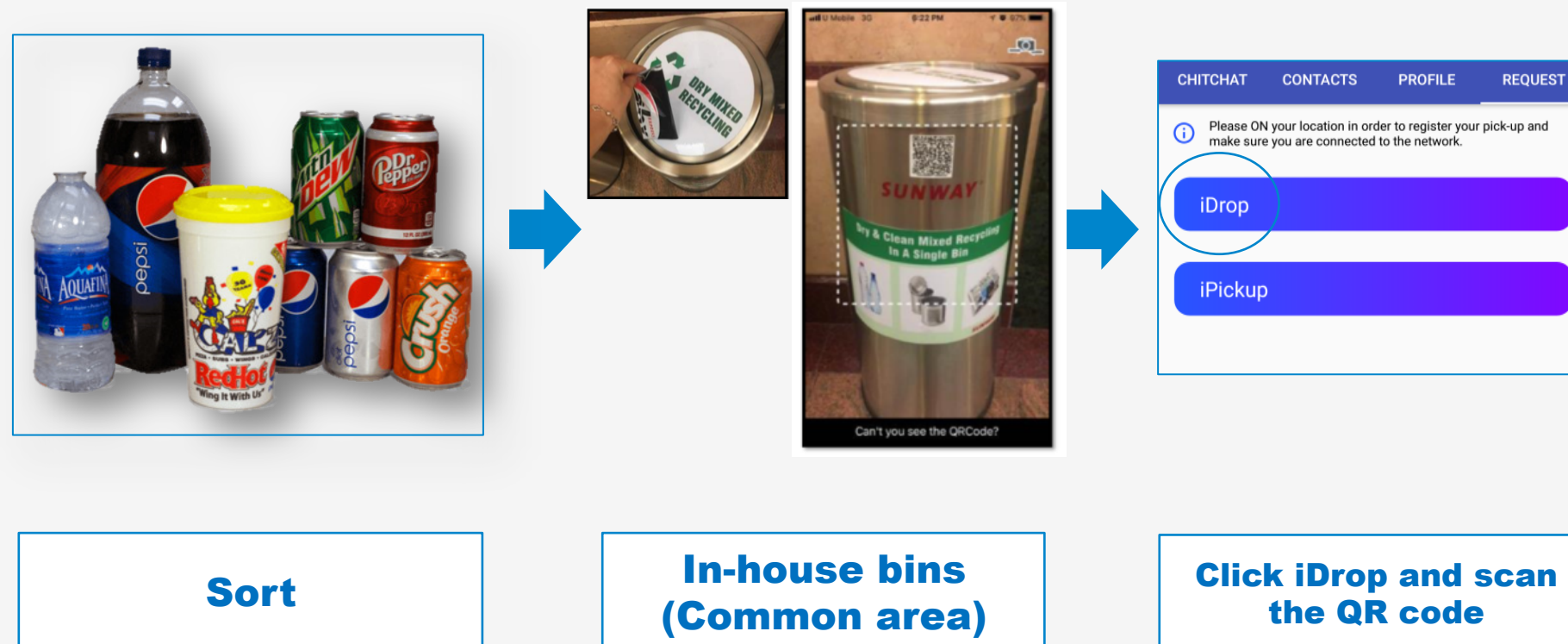




MAIN CHALLENGES (PANGKOR ISLAND AND THE PEOPLE)

- **Sustainable Business and Economical Eco-System. – Depleting fishing resources and growing service sectors.**
- **Environmental Threat from within and the region.**
- **Readiness and connectivities of the people to the challenge.**
- **Direct Threats:**
 - **External polluting sources (power plant, Vale, ships etc)**
 - **Internal polluting sources (domestic and industrial waste, tourism waste and disturbances)**
- **Indirect Threats:**
 - **Tourism and Fishing activities**
 - **Residents activities**
 - **Waste Management**
 - **Lack of proper infrastructures**

Situation 1: Faculty, Office, Cleaner shall have barcode



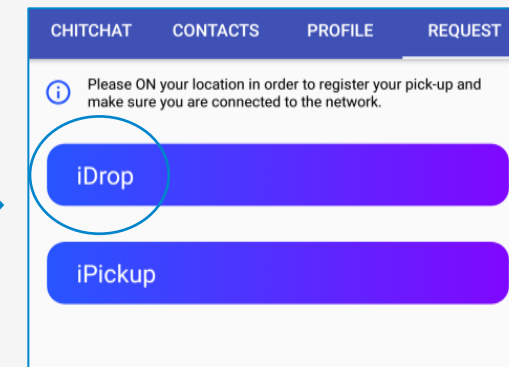
Situation 2: Apartment by iCYCLE



**Anything Non-Food,
Clean and Dry, Sort
and Pack (attach
barcode)**



**Recycled Plastic
Recycling Bin**

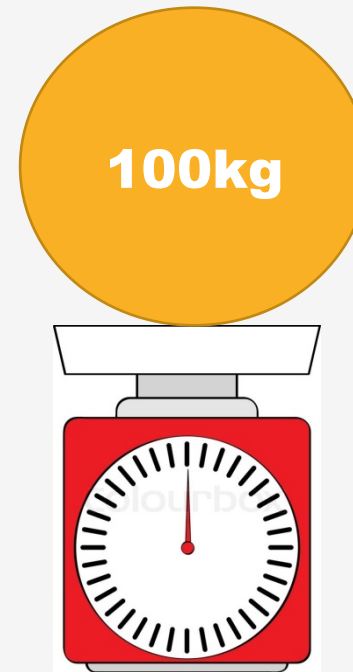


**Click iDrop and scan
the QR code (if any)**

Situation 3 : Commercial Block with Cleaner and Contractors



**Sort and Pack
(attach barcode)**



**Collect from
storage and weigh**



**Record down in
manual form and
update cleaner
service records**



EXECUTIVE COMMITTEE TEAM of BAGAN LALAYANG ZERO WASTE PROGRAM



Staff of MPSP and
Volunteers
working hand-in-
hand enhance
Zero Waste
Community
Interaction



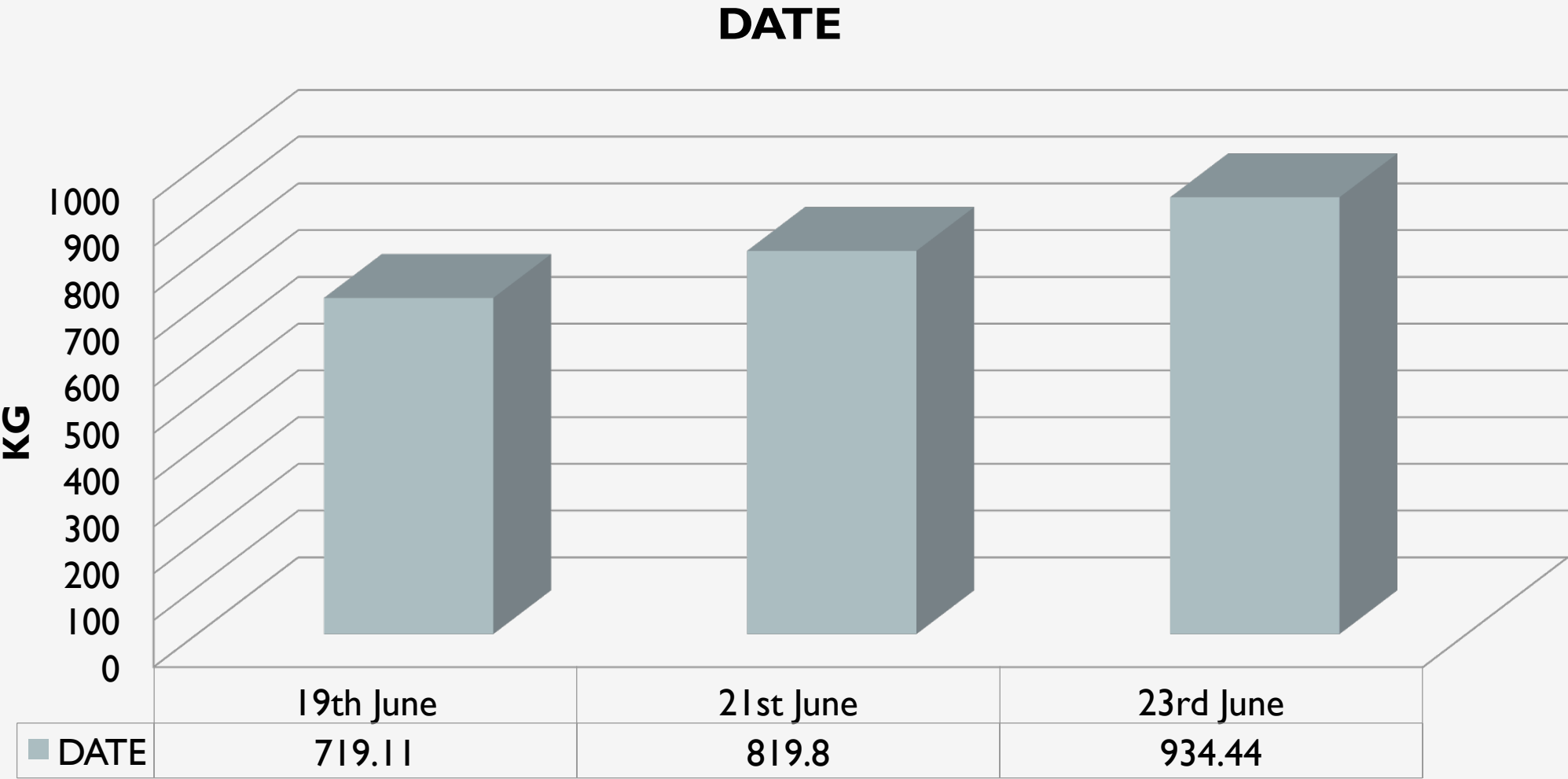


**Individual Members
using Phinonic Apps,
iSCAN feature to
record down collection
details**

**Staff from MPSP
accumulate house-to-house
food waste and sendover to
Edible Garden / Composting
Machine**



FOOD WASTE COLLECTION GRAPH (KG)

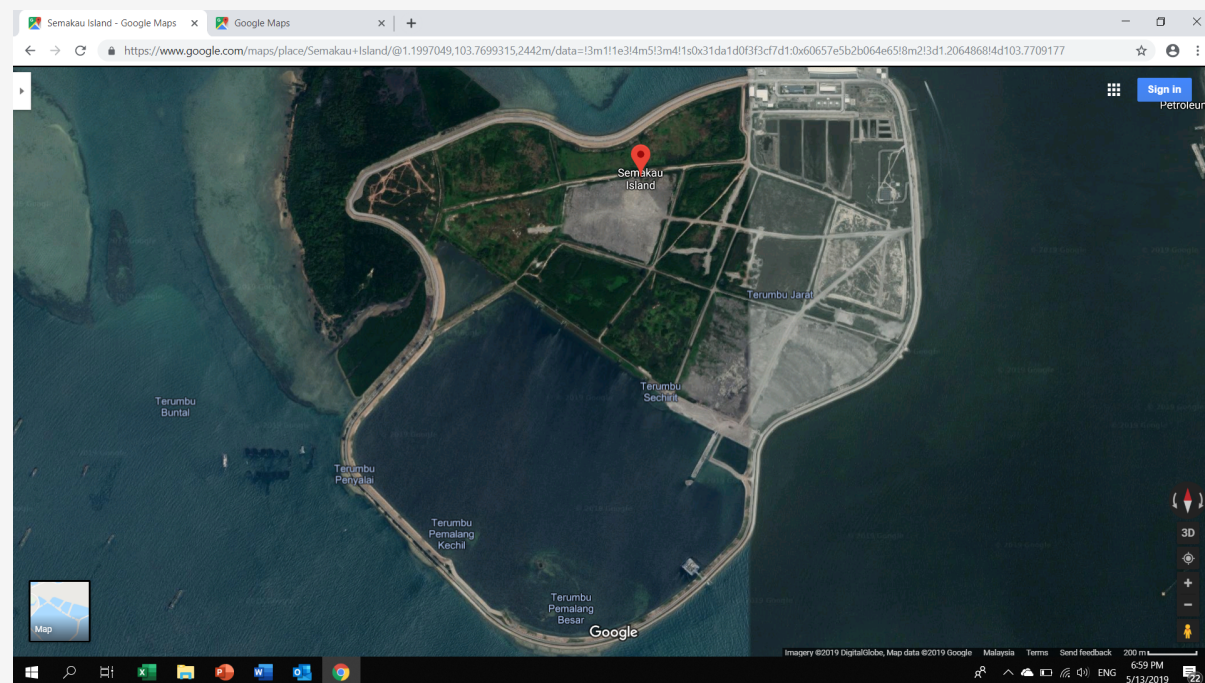


Which cycle is the better or smarter cycle?

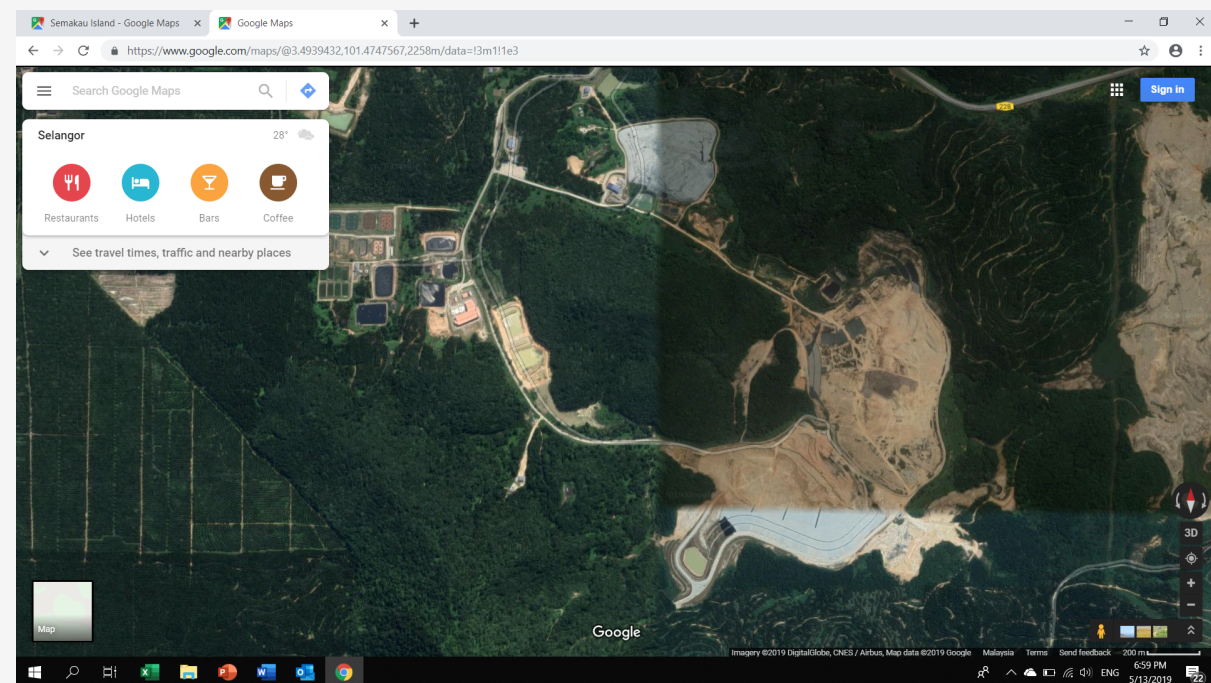


What problems are we solving among these 2 cycle based on using this number: 14 Million ton / year?

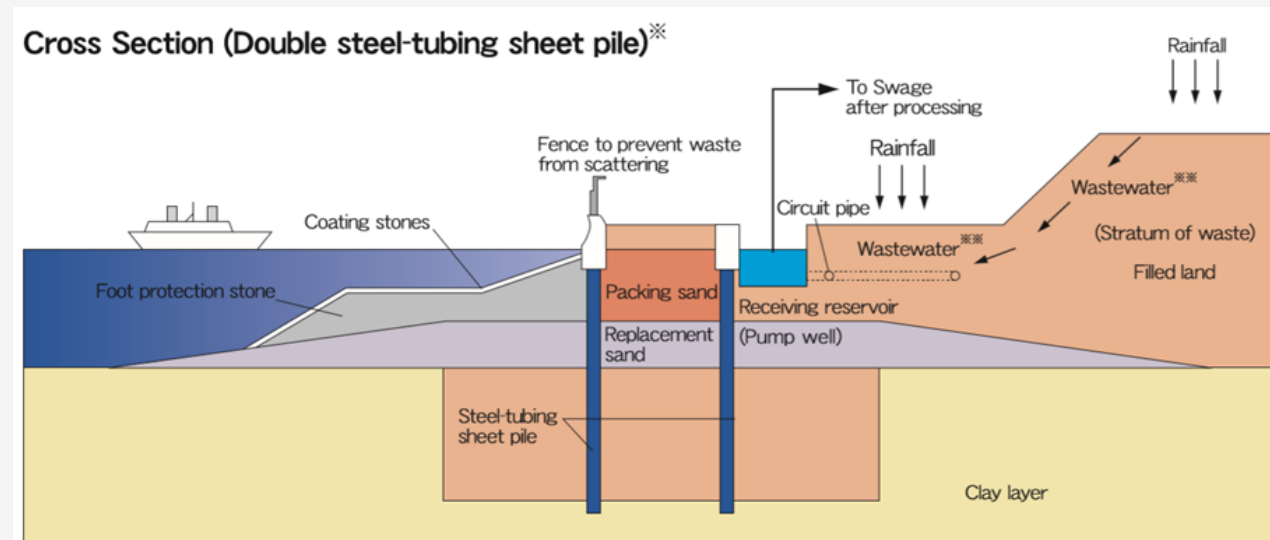




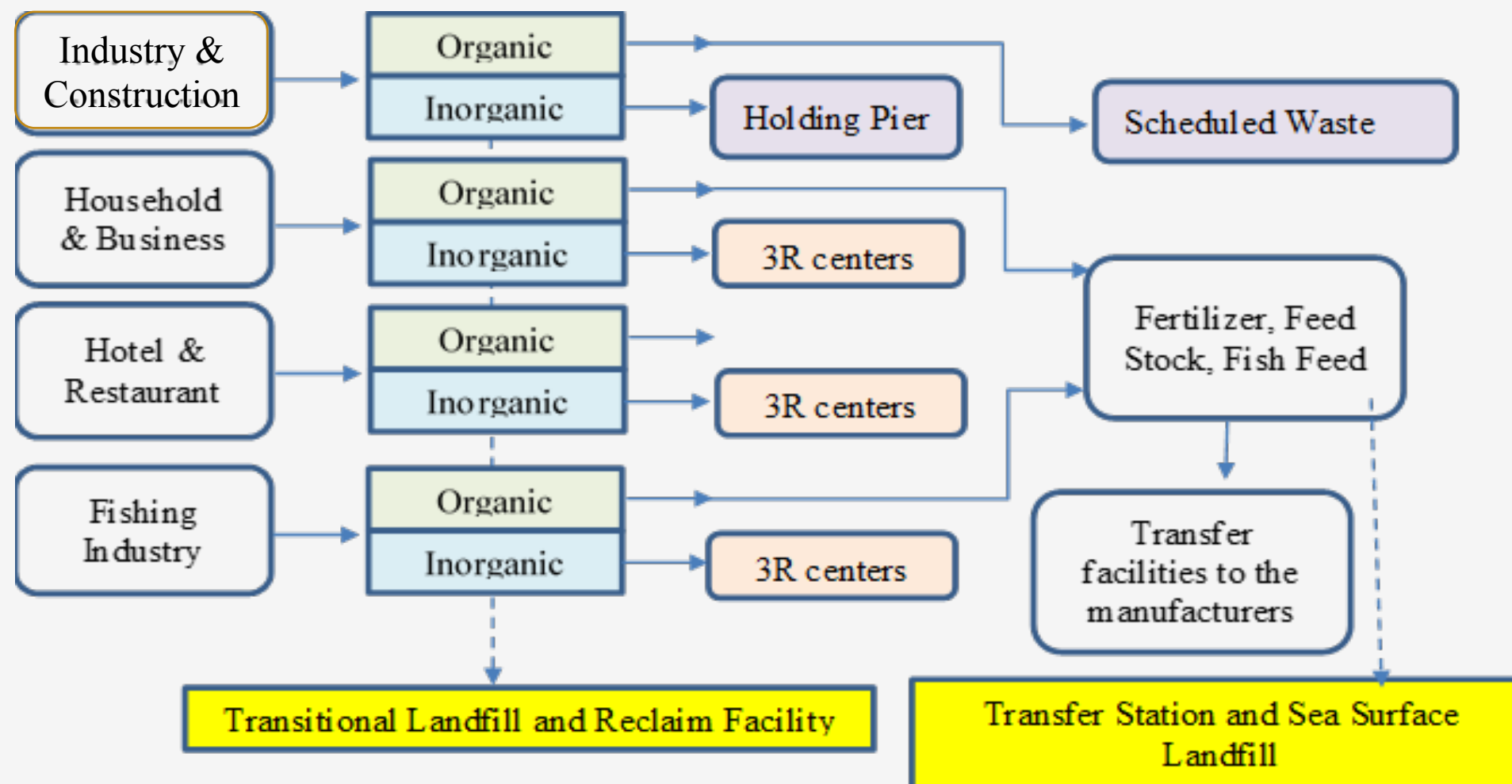
Semakau Landfill after incineration.



Bkt Tagar Landfill.



EXAMPLE – DETOXICATION, CIRCULAR & MINIMIZATION OF WASTE



Marine Plastic Offsetting Program

A self-sustainable and community engagement program by incentivizing communities & businesses for waste separation at source and facilitating historical data tracking.

Permanent installation, not beach cleaning, not event, it is daily living who the local will be engaged accordingly. This program also specialise in marine or coastal waste management that provides solution in sustainable coastal community waste management activities.

There are 4 requirements:

- 1) Storm Proof Container and segregation centre (e.g. iCYCLE)
- 2) Licensed collector who collect and recycled, not to landfill or burnt.
- 3) 3R awareness and community engagement model (e.g. iCYCLE community rewarding model)
- 4) Data (up to individual level, internet of waste things)



Example of CSR

$$C=f(W, Y, D, R),$$

C = Annual budget derived from CSR to achieve Plastic Offsetting Program, per location;
 W = Total weight of sales from current products;
 Y = Types of products;
 D = Distance to cover (area to implemented the system);
 R = Revenue from the sales and services.

$$\max a(\sum_{i=1}^n \sum_{j=1}^m x_{ij} y_{ij} - \sum_{i=1}^n \sum_{j=1}^m z_{ij} p_{ij}) / C$$

C = Annual budget derived from CSR to achieve Plastic Offsetting Program, per location;
 x = tonnage of targeted item collection;
 y = financial derived value per unit item;
 Z = satellite or drone scanning items in the area but failed to be retrieved;
 P = penalty term per unit evidence (decided based on negative impact that causing the unhappy tourist or stagnant business growth);
 a = area to be implemented;



Technological Example : Kg Bako

Terra Phoenix Drone 10cm x 10cm resolution scan



Google map 70 cm x 70 cm resolution scan



Upcoming Contracts

- ICI (Industrial, Commercial and Institutions) Waste Separation Enforcement, effective on 1-Aug-2019.
- RM 10k fine for not compliance.



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Rujukan kami: KPKT/BPK/19/7/4 Klt.48 (87)
Tarikh: 20 September 2018

SIARAN MEDIA

PENGUATKUASAAN PERATURAN-PERATURAN PENGURUSAN SISA PEPEJAL DAN PEMBERSIHAN AWAM BAGI SISA PEPEJAL KOMERSIAL, PERINDUSTRIAN DAN KEINSTITUSIAN

PUTRAJAYA, 20 September 2018 – Jabatan Pengurusan Sisa Pepejal Negara (JPSPN) telah menguatkuasakan **Peraturan-Peraturan Pengurusan Sisa Pepejal dan Pembersihan Awam (Pelesenan) (Pengusahaan atau Penyediaan Perkhidmatan Pemungutan bagi Sisa Pepejal Komersial, Perindustrian dan Keinstitusian) 2018 (P.U. (A) 180)** dan **Peraturan-Peraturan Pengurusan Sisa Pepejal dan Pembersihan Awam (Skim bagi Sisa Pepejal Komersial, Perindustrian dan Keinstitusian) 2018 (P.U. (A) 181)** di tujuh buah negeri yang menggunakan pakai Akta Pengurusan Sisa Pepejal dan Pembersihan Awam 2007 (Akta 672).

Sehubungan itu, penghasil sisa pepejal komersial, perindustrian dan keinstitusian (ICI) dikenendaki untuk mengambil tindakan berikut:-

1. Mengasingkan sisa pepejal;
2. menyediakan bekas (tong sisa pepejal) yang sesuai;
3. melantik orang yang berlesen dengan JPSPN. Permohonan lesen boleh dibuat secara manual mulai 1 Ogos 2018 bagi perkhidmatan pemungutan; dan
4. menyimpan rekod berhubung perkhidmatan pemungutan.

Bermula 1 Ogos 2019, mana-mana penghasil sisa pepejal komersial, perindustrian dan keinstitusian serta pengusaha perkhidmatan pemungutan yang melanggar Peraturan-Peraturan tersebut boleh dikenakan tindakan perundangan. Untuk keterangan lanjut berkaitan peraturan ini, sila layari <http://jpspn.kpkt.gov.my>

Kementerian Perumahan dan Kerajaan Tempatan (KPKT) diterajui oleh YB Puan Hajah Zuraida Kamaruddin. Di bawah Kementerian ini terdapat 9 Jabatan iaitu PLAN Malaysia; Jabatan Bomba dan Penyelamat Malaysia; Jabatan Perumahan Negara; Jabatan Kerajaan Tempatan; Jabatan Landskap Negara; Jabatan Pengurusan Sisa Pepejal Negara; Solid Waste Corporation Malaysia; Tribunal Perumahan dan Pengurusan Strata; dan Institut Latihan Perumahan dan Kerajaan Tempatan.

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QUESTIONS?

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