

Solid Waste & Sewage Management

ON SMALL INHABITED ISLANDS OF MALAYSIA



Introduction

ISLANDS. SUNNY PARADISE, TROPICAL RETREAT, WHITE SAND BEACH AND AN ACCUMULATING PILE OF TRASH?

It is quite common for islands to be revered as pristine wonderlands, but the ugly side of the story often receives far less coverage.

Humans produce waste. For mainland communities, waste is received by large-scale centralized systems. Solid wastes are sent to landfills and sewage is treated at large scale sewage treatment plants. Waste generated on islands, however, cannot be taken in directly by centralized systems. But it has to go somewhere.

So how do islanders deal with their solid waste and wastewater? What role do island resorts play? Most importantly, is the current practice sustainable? These isolated lands have different demographics, awareness and dynamics. They only have one thing in common: the fact that there is no one-size-fits-all solution.

According to the Department of Survey and Mapping, Malaysia has 878 islands, that means 878 unique set of characteristics. However not all are inhabited.

Of course, large islands like Penang and Pangkor have established comprehensive waste management because the issue is simply too big to ignore.

But what about the small, isolated islands? They certainly do not receive the same attention as the large islands do, which makes them hotspots for waste mismanagement.

We have identified 31 small and inhabited islands across five states of Malaysia which fit this description. This report sheds light on the current solid waste management and sewage treatment practices on these islands, and identifies some of the challenges they face to improve waste management. The report also makes several recommendations for action.

The waste management situation on some islands, as we will discover, is in urgent need need of action. This report highlights the need for swift action from stakeholders.

Peninsular Malaysia



1800



Collected at irregular times and sent to mainland landfill



Poorly maintained open sewage treatment; septic tanks

Pulau Perhentian



2000



Open burning; sent to mainland landfill



Cesspits & septic tanks

Pulau Redang



250



Sent to Bukit Tambun landfill; open burning; composting



Cesspit with occasional emptying

Pulau Aman



3700



Controlled incineration but limited capacity



Septic tanks & soakaway systems

Pulau Tioman



515 (Aur, Besar, Pemanggil, Sibul, Tinggi)



Open burning; open dumping; composting; recycling; sent to mainland landfill



Cesspits & septic tanks

Mersing Islands

Sabah

Mantanani Islands

- 1000
- Sent to mainland landfill; wide-scale recycling
- Soak-away pits

Tun Mustapha Park

- 10500 (Balambangan, Banggi, Tigabu)
- Open burning; dumping into ocean (Pulau Balambangan has its own landfill on the island)
- Non-existent

Pulau Gaya

- 4200+
- Open burning; bury; dumping into ocean
- Non-existent; resorts use septic tanks

Pulau Libaran

- 340
- Bury on island
- Some use septic tanks

Pulau Bohayan

- 50 households
- Open burning; ocean dumping
- Non-existent

Pulau Omadal

- 300
- Open burning; ocean dumping
- Non-existent

Sabah



10 households



Open burning; ocean dumping



Non-existent

Pulau Timbun Mata



At least 2000 (Bodgaya, Boheydulang, Tetagan, Selakan, Sebangkat, Maiga, Sibuan, Mantabuan)



Open burning; ocean dumping; sometimes sent to mainland landfill



Wastewater stored in holding tanks and emptied out by contractors

Tun Sakaran Marine Park



1200




Open burning; ocean dumping




Non-existent


Pulau Lrarian



Unknown




Open burning; ocean dumping; sometimes sent to mainland landfill




Non-existent


Pulau Kalapuan



558



Open burning; ocean dumping; some are sent to mainland landfill



Stored in poly-tanks and buried

Pulau Mabul



300+ (Denawan & Si Amil)



Open burning; ocean dumping



Non-existent

Pulau Denawan & Pulau Si Amil

Key Takeaways

The default solid waste disposal method is transporting waste to a mainland landfill. We found many inefficiencies in this system due to irregular waste collection schedules, insufficient collection points and in some cases, the sheer volume of waste generated. Open burning and ocean dumping is still an on-going issue.

On islands where data is available, food waste occupies the largest percentage of island solid waste composition.

Sewage treatment on small inhabited islands requires the most urgent attention as many islands are still without any basic sanitation, particularly the Sabah islands. The volume of wastewater generated is too little to justify the construction of costly sewage treatment plants.

Others employ cesspit tanks and a small percentage use septic tanks. Both require regular maintenance to prevent serious health and environmental hazards.

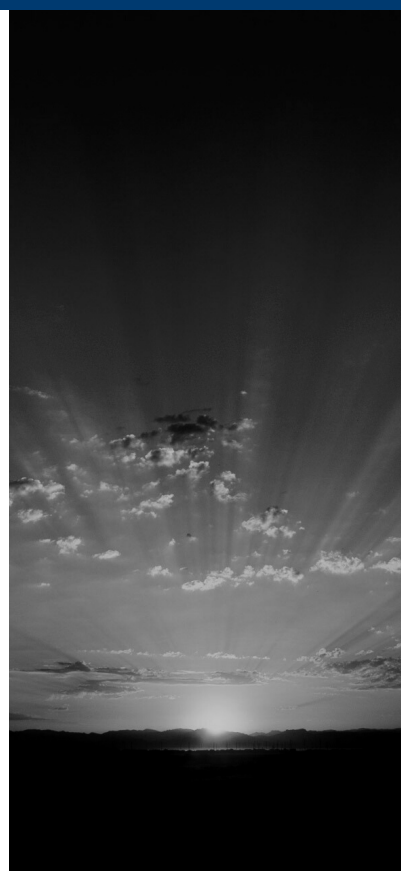
RECOMMENDATIONS

SOLID WASTE MANAGEMENT

- Streamline solid waste collection
- Minimize waste generation by reducing consumption & recycling
- Compost organic waste
- Incorporate recycling technology (eg. Baler machine)
- Integrated waste management

SEWAGE TREATMENT

- Deploy septic tanks with fixed desludging schedule (most inexpensive and effective short term solution)
- Explore other large-scale sewage treatment systems (expensive long term solution)



Conclusion

IN A NUTSHELL

This research sets out to study the current solid waste management and sewage treatment practices on the small, inhabited islands of Malaysia. We acknowledge the limitations of our survey methodology and invite future researchers to build upon this study.

The problems small islands face are clear and for each problem there is a direct solution. With the cooperation and swift action of all stakeholders, we believe our tropical islands can retain their pristine image.



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Based on the full report titled: "Solid Waste Management and Sewage Treatment on Small Inhabited Islands in Malaysia 2021"

