

- Case Study - Sludge treatment in T. Park



Sustainable
development
goals (SDGs)

- Goal 7: Affordable and clean energy
- Goal 9: Industry, innovation and infrastructure
- Goal 12: Reasonable consumption and production



Relevant concept/
issues

Closed-loop economy



Relevant sector

Waste management

The content of the case study (solutions to the issues identified in the concept information sheet)

Over the years, landfilling has been the only means of sludge disposal. That is no longer a sustainable waste management solution due to the substantial increase in the amount of sludge that needs to be disposed of as a result of Hong Kong's growing population. There have been various upgrades and improvements in sewage treatment systems, including the Harbour Area Treatment Scheme, however the lifespan and stability of our landfills remain adversely effected.

What is sludge?

'Sludge' is a thick mud-like by-product of sewage treatment. We produce close to 3 million cubic meters of sewage in Hong Kong, which results in approximately 1,200 tonnes of sludge every day. Sludge needs proper and sophisticated handling in order to build a sustainable future for Hong Kong.

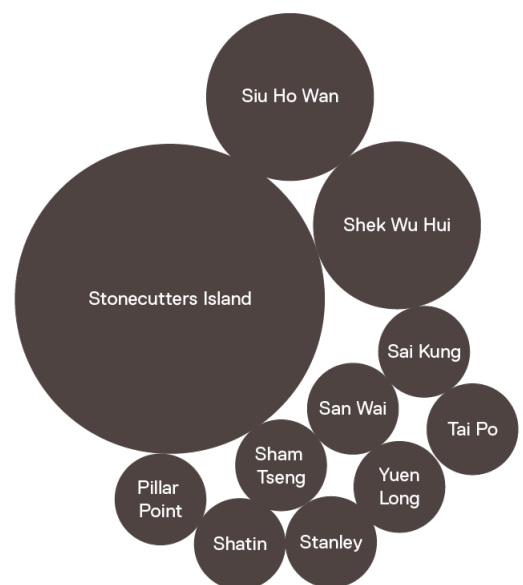


Fig. 1. 11 Major Sewage Treatment Works in Hong Kong

Source of sludge

Sewage, that comes from toilets, cooking and washing, for example, is generated in our daily lives. It is collected and treated in sewage treatment works before being discharged into water bodies. After a chemical enhanced primary treatment and secondary treatment of sewage, sludge is produced for proper and safe disposal.

Composition of sludge

There are 11 major sewage treatment works in Hong Kong. The Stonecutters Island Sewage Treatment Works produces almost 70% of the total sludge in the territory.

The solution

T. Park is almost a perfect example of a closed loop facility. All the facilities and technologies at the center strive to use waste to produce energy or fuel. After incineration of the waste at high temperatures, only 10% of ash and residuals need to be sent to landfill. The process itself then represents a total reduction of 90% of the original sludge volume. As only 10% of this remaining waste needs to be sent to landfill, greenhouse gases are reduced by up to 237,000 tonnes a year.

Burning is a highly effective method of sewage sludge treatment. Advanced incineration technology through the high-tech thermal process is adopted to treat the sludge efficiently and reliably. With two plants housing four incinerators in the facility, T. Park can handle 2,000 tonnes of sludge each day.

The heat energy generated from the incineration process is recovered and turned into electricity that can support the needs of the entire T. Park facility. When it runs at full capacity, the facility can produce up to 2 megawatts (MW) of surplus electricity for the public power grid, which is a very good example of 'waste-to-energy' in action. When the turbines are running at full capacity they can supply power to 4,000 households.

Green features: Waste-to-energy all over the Park

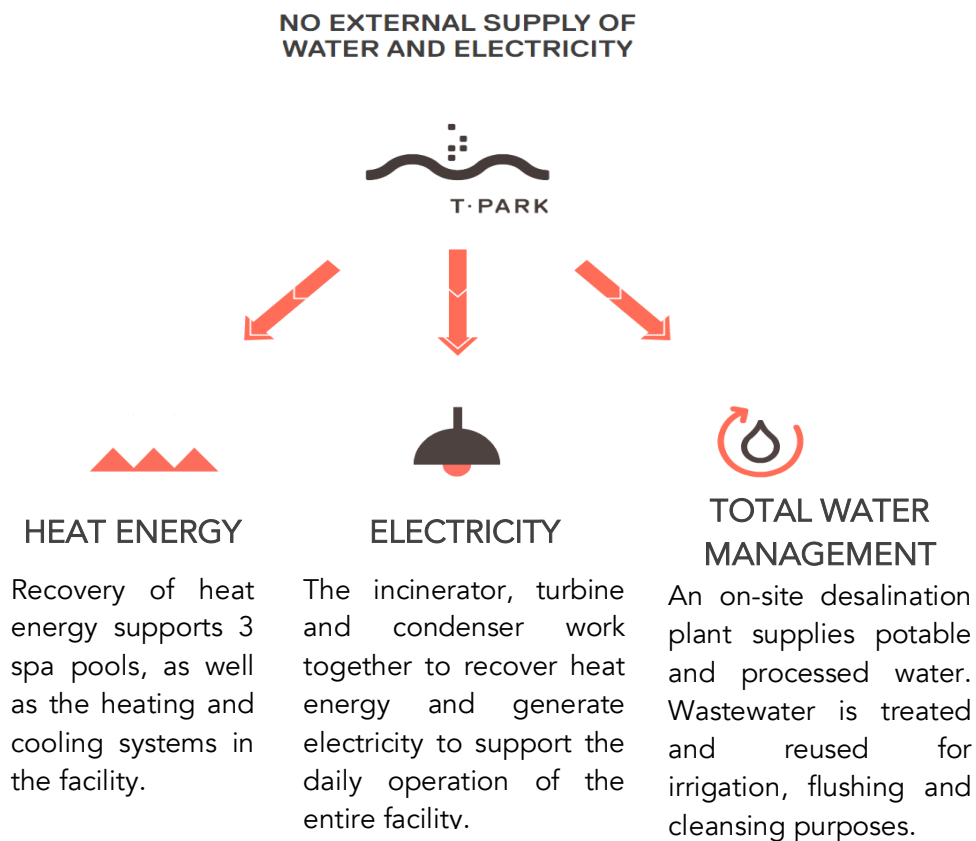


Fig. 2. The self-sufficient system of T. Park

Source: Adapted from Story | T · PARK .

Reference:

Story | T · PARK. Retrieved from <https://www.tpark.hk/en/story/>