## Toward an appropriate technology transfer of Fukuoka Method to the World

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# What is Fukuoka Method ?

The Fukuoka Method is a semi – aerobic landfill technology developed jointly by Fukuoka University and Fukuoka city in 1970s, now a standard method for all local governments in Japan.



## **Advantages of F.M**

- 1. To reduce by 1/100~200 Pollutant of Leachate
- 2. To reduce by 20~50% Methane Emission
- 3. To reuse & recycle Completed Landfills

CDM by UNFCCC in 2011



# Why is Fukuoka Method ?

## Low cost

- Low technology
- Environmentally friendly
  - (UNFCCC approved in 2011)
- Re-use of land after completion
- Locally adaptable (materials, labor)
- Possible to implement the principles for new construction, for rehabilitation, improvement, for closure

#### Main facilities at landfill site based on Fukuoka Method



## Transfer Technology to Developing Countries based on Fukuoka Method



## 1<sup>st</sup> Trial Improvement of Landfills based on Fukuoka Method in Malaysia



改善前のアンパンジャジャル埋立場(1988年)

改善中途の埋立地



改善されたアンパンジャジャル埋立場(1996年)



改善中途の埋立地



多目的酸化池での曝気(1996年)



ラム缶を使った循環式準好気性埋立地



浸出水処理設備(パイロットプラント)



ガス抜き設備の効果により、植生が回復





浸出水(1:原水、2:曝気後、3:ろ過・吸着処理後)

First Fukuoka Method Technology Transfer to Malaysia: from open burning dumpsite to sanitary landfill





Developing the landfill in phases while accommodating the current situation of the site. Safe closure and re-utilization of the landfill site

Constructing semi-aerobic landfill type and simple leachate treatment facilities.

From sanitary landfill to the Fukuoka Method (Semi-aerobic landfill type)

From open dumping and open burning to sanitary landfill disposal.

#### Improving the existing landfills step by step in Yangon, Myanmar



Plants are growing and the landfill's semi-aerobic conditions are maintained.



## Ongoing project in Ethiopia Addis Ababa city 2017-2023

Emergency Rehabilitation
Onsite training
Engagement of wastepickers
Improvement of SWM system

# Koshe/Reppie Dump Site Collapsed in March 2017; taking more than 100 lives of wastepickers and surrounding community



Similar dump site collapse, slide, fire are increasing globally such as Mozambizue, Myanmar, Indonesia, Sri Lanka, etc.



#### Before Implementation



After 10 months



4 ~6 months after project completion: July 2019

## Berbera, Somaria (2024)



### Safe closure and re-utilization of the Completed landfill sites $\frac{1}{8}$



# **Semiaerobic Concept**

*"If Landfill is under aerobic condition, Landfill have not only dumping function but also treatment function"* 

In near future, Landfill will be called

"Depo-land (Deposit Landfill)"

That means,

1.Dumping site

2.Treatment site

**3.Store & Safe-keeping site** 



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Japan has declared its desired to disseminate the "Fukuoka Method" to the world in the future !

at

The Maputo Declaration of TICAD 6,

The 2<sup>nd</sup> ACCP Yokohama Meeting in 2026,

The 3<sup>rd</sup> ACCP Tunis Action Guidance in 2022,

COP 27 in Egypt 2022 ,COP28 in Dubai 2023 and WUF 12 in Egypt 2024



SUCCESSFUL CASE-STUDY IN MALAYSIA [Reference] A ROAD TO SEMI-AEROBIC LANDFILL TYPE BY FUKUOKA METHOD Vol.0 by NPO SWAN FUKUOKA

(Photo courtesy · Cooperation) NPO SWAN-FU UN-Habitat





