

POLICY BRIEF  
SUBMITTED TO THE GOVERNMENT  
OF WEST JAVA PROVINCE



WASTE EMERGENCY AND CLIMATE CHANGE  
CALLS:

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# **BANNING ORGANIC WASTE AS A SOLUTION TO THE REGIONAL WASTE MANAGEMENT CRISIS AND CLIMATE CHANGE MITIGATION MEASURES**



YPBB

SEPTEMBER | 2023

# ADDRESSING THE WASTE EMERGENCY IN THE REGIONAL LANDFILL WITH A CLIMATE-FRIENDLY APPROACH

PICTURE: ROBIN ERINO/PEXELS

Currently, a crisis in the Sarimukti Regional Landfill has been happening. The stakeholders have agreed that reducing organic waste is the cheapest, easiest, and fastest way compared to other steps.

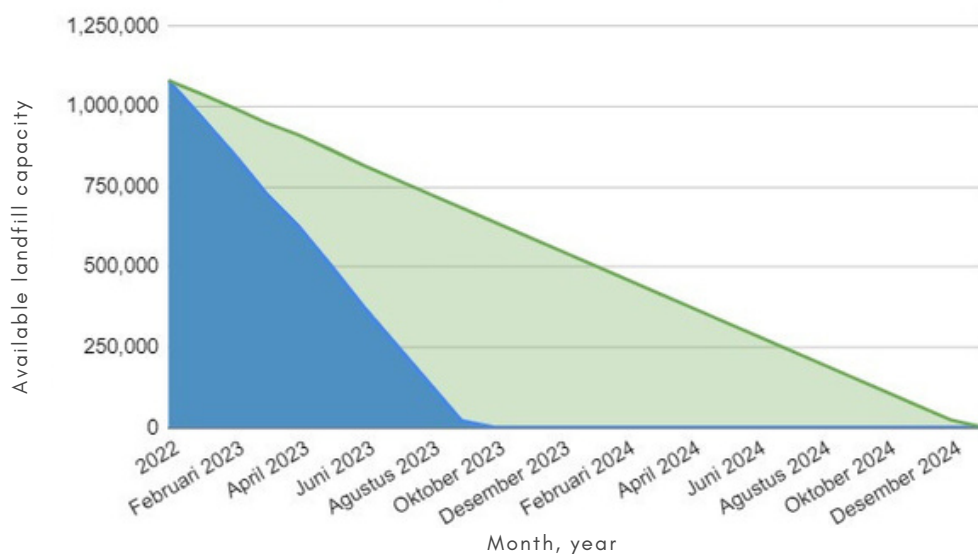
## THE CURRENT CONDITIONS:

The Sarimukti Regional Landfill of West Java has the potential to reach its maximum capacity at the end of 2023 if there are no significant reduction measures.

It is necessary to ensure that the Sarimukti Regional Landfill can operate at least until 2028 to support a smooth transition to the Legok Nangka Regional Landfill.

## POLICY RECOMMENDATION:

**Banning the disposal of organic waste in landfills and managing waste without burning can quickly overcome the landfill crisis, as well as improve the performance of the West Java Provincial Government in significantly reducing carbon emissions from the waste management sector.**



During emergencies, banning the disposal of organic waste in landfills could potentially alleviate the issue of overflow.

**Not implementing the organic waste ban could lead to overcapacity of the landfill and another waste emergency in the region.**

- Available landfill capacity if all of the mixed waste is sent to the landfill (without organic waste reduction efforts)
- Available landfill capacity if only the residues are sent to the landfill (with organic waste reduction implemented)

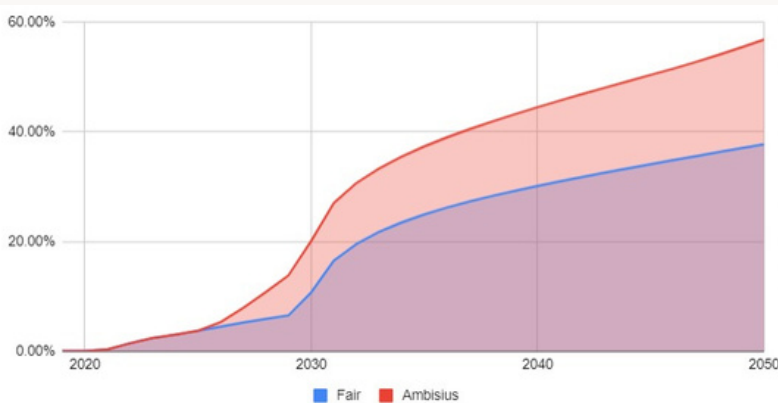
INTERNAL STUDY OF YPBB (2023)

# THE WEST JAVA PROVINCIAL GOVERNMENT MUST PREPARE TO MEET INCREASINGLY HIGHER NATIONAL GHG EMISSION REDUCTION TARGETS OVER THE NEXT DECADE.

West Java Province, as a Regional Government, **implements national climate change mitigation efforts** by targeting reduction of greenhouse gas (GHG) emissions according to **Law Number 16 of 2016** and **Presidential Regulation Number 98 of 2021**. Apart from that, West Java Province has been designated a **Low Carbon Development Pilot Province** under the PRK Memorandum of Understanding with Bappenas on April 2 2019. Therefore, the West Java Provincial Government needs to create a further innovation in the future to strengthen its position.

## THE TARGET OF GHG EMISSIONS REDUCTION WILL INCREASE IN THE UPCOMING YEARS.

### REDUCTION PERCENTAGE (%) OF GHG EMISSIONS IN WASTE SECTOR



ANALYSIS BASED ON: BAPPENAS. (2020). LOW CARBON DEVELOPMENT PLAN OF WEST JAVA PROVINCE.

<https://www.un-pageindonesia.org/assets/uploads/40b48-laporan-rprkd-jabar-final.pdf>

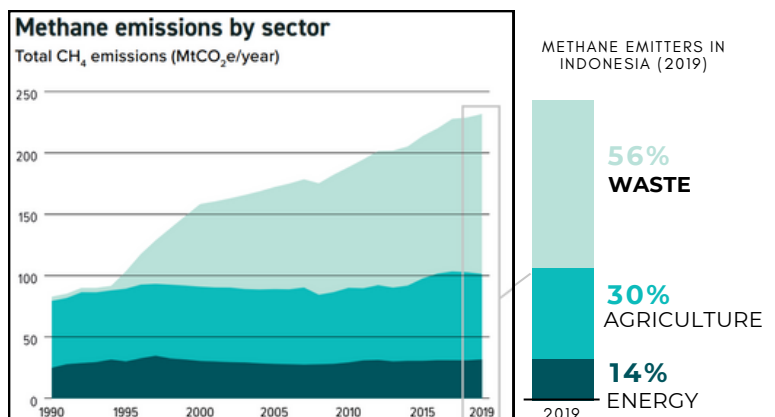
The West Java Provincial Government has achieved a 3.83% reduction in GHG emissions, surpassing the target of 0.83% (PEP RAD GRK, 2022). According to the Regional Low Carbon Development Plan, the **target for reducing GHG emissions will increase to five times the 2023 target by 2028**. Therefore, West Java Province must develop **effective strategies and plans** to reach the growing target.

## Reducing methane emission (CH<sub>4</sub>) is a global concern as it is considered as the **low-hanging fruit** to reduce GHG emissions.

Methane is a GHG emission that is 84-86 times more potent than Carbon dioxide<sup>1</sup>. Therefore, citing the Zero Waste to Zero Emission report, **reducing methane emission is one of the fastest ways to reduce global warming**<sup>2</sup>. According to the Climate Transparency Report (2022), Indonesia's **waste management** sector is the largest contributor to methane emissions.

<sup>1</sup>In 20 years timeframe. Source: Vallero, (2019). *Air Pollution Calculations*: <https://www.sciencedirect.com/topics/earth-and-planetary-sciences/global-warming-potential>, and from Global Methane Hub: <https://www.globalmethanehub.org/>

<sup>2</sup>Zero Waste to Zero Emission Report, GAIA (2022): [https://www.no-burn.org/wp-content/uploads/2022/11/zero-waste-to-zero-emissions\\_full-report.pdf](https://www.no-burn.org/wp-content/uploads/2022/11/zero-waste-to-zero-emissions_full-report.pdf)



CLIMATE TRANSPARENCY REPORT, CLIMATE TRANSPARENCY (2022): <https://www.climate-transparency.org/wp-content/uploads/2022/10/CT2022-Indonesia-Web.pdf>

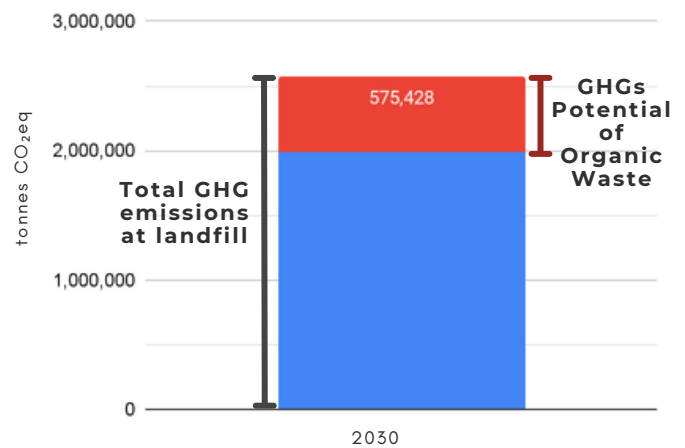


# BANNING THE DISPOSAL OF ORGANIC WASTE IN LANDFILLS WITHOUT BURNING ARE THE MOST SIGNIFICANT STEPS IN REDUCING GHG EMISSIONS

**Banning organic waste landfilling will significantly reduce GHG emissions.**

GHG emissions from all of the landfills in the West Java Province are estimated to reach 2,567,476 tonnes CO<sub>2</sub>eq in 2030. The YPBB and GAIA study reveals that **banning organic waste from Bandung City in the regional landfill can reduce GHG emissions by 22%** or 575,428 tonnes CO<sub>2</sub>eq. This reduction is almost equivalent to the ambitious target of a **29% reduction of GHG in landfills by 2030** in the 2020 West Java Province Regional Low Carbon Development Plan (RPRKD).

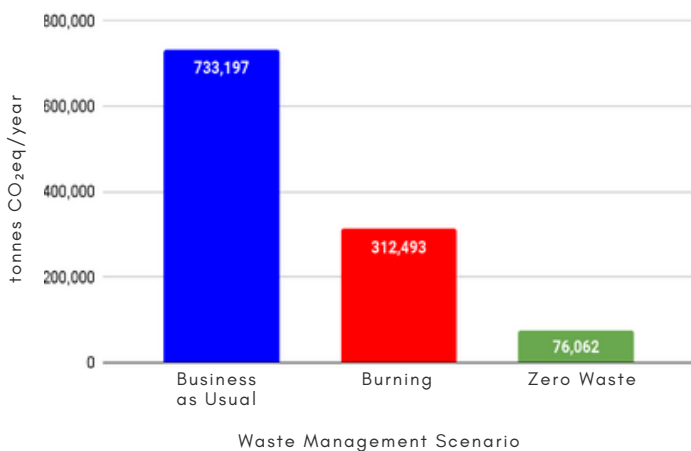
## GHG REDUCTION POTENTIAL FROM BANNING THE DISPOSAL OF ORGANIC WASTE IN LANDFILL (2030)



ANALYSIS BASED ON: BAPPENAS. (2020). LOW CARBON DEVELOPMENT PLAN OF WEST JAVA PROVINCE.

<https://www.un-pageindonesia.org/assets/uploads/40b48-laporan-rprkd-jabar-final.pdf>

## TOTAL GREENHOUSE GASES IN WASTE MANAGEMENT SCENARIOS



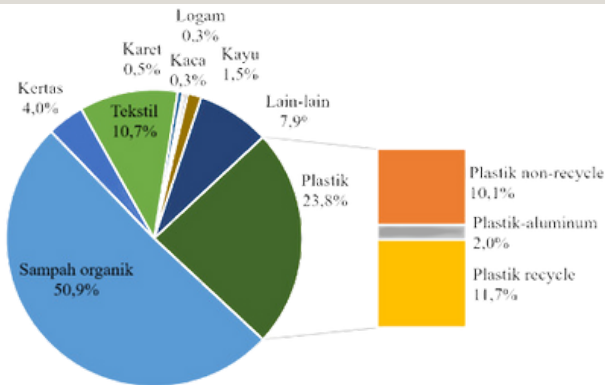
STUDY OF YPBB DAN GAIA (2022)

The study of YPBB and GAIA shows that **waste management that prioritizes banning the disposal of organic waste in landfills can reduce carbon emissions by 90%** compared to mixed waste-based and 75% lower than the burning-based approach.

Meanwhile, **burning municipal waste in Bandung will produce carbon emissions up to 447,864 CO<sub>2</sub>eq.** Thus, the process **transfers the form of emissions** from methane gas through landfilling to Carbon dioxide (CO<sub>2</sub>) emission through burning the waste.

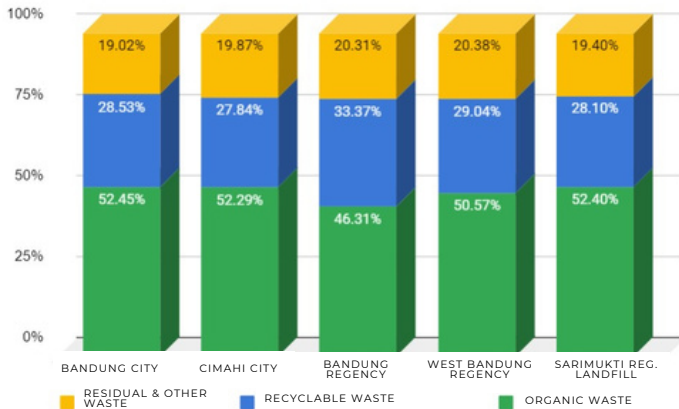
# ORGANIC WASTE IN LANDFILLS IS A MAJOR SOURCE OF GHG EMISSIONS.

## TYPES OF WASTE IN SARIMUKTI REGIONAL LANDFILL



STUDY OF YPBB (2017)

## COMPOSITION OF WASTE LANDFILLED IN SARIMUKTI, COMPARED TO WASTE COMPOSITION FROM SOME DISTRICT IN METRO BANDUNG REGIONAL

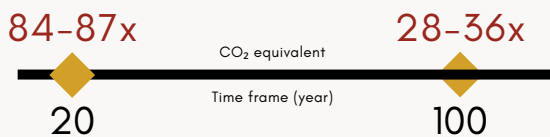


STUDY OF YPBB (2020)

## CONCENTRATION OF LANDFILL GAS: CH<sub>4</sub> + CO<sub>2</sub>

The decomposition of organic waste in landfills under anaerobic conditions can generate **methane (CH<sub>4</sub>)** dan **Carbon dioxide (CO<sub>2</sub>)**<sup>1</sup>. Meanwhile, CH<sub>4</sub> gas is much more potent than CO<sub>2</sub> and **can raise the fire risk in landfills**<sup>2</sup>.

### Comparison of CH<sub>4</sub> to CO<sub>2</sub>

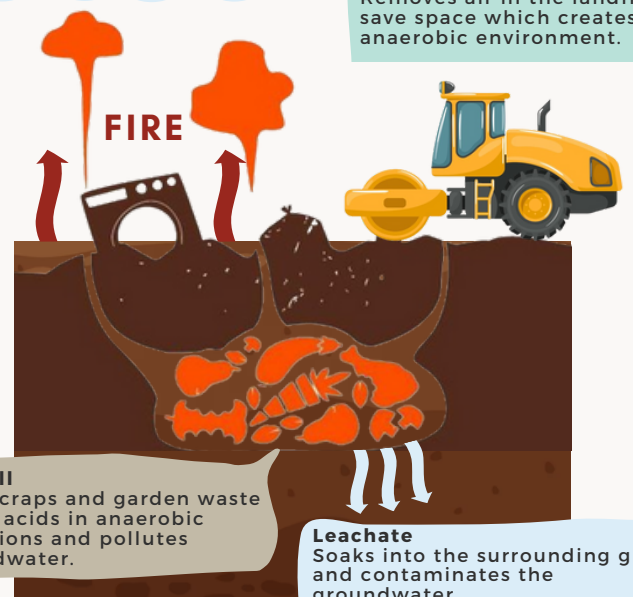


## ORGANIC WASTE MAKES UP HALF OF THE WASTE COMPOSITION IN THE LANDFILL

Studies show that 50% of waste at Sarimukti Regional Landfill is organic. However, upon comparison with the waste generation data in the Metro Bandung Regional, it is evident that **there has been little to not alteration in the waste composition** - both in the waste generation region and in the landfill. It indicates that **the efforts to decrease waste generation are still insufficient**.

**Methane**  
(a very strong greenhouse gas) produced from food and garden waste kept under anaerobic conditions.

**Compactor**  
Removes air in the landfill to save space which creates an anaerobic environment.



Soil, organic waste, and compactor illustrations from Pinterest & Freepik.

<sup>1</sup> ATSDR, (2008). [https://www.atsdr.cdc.gov/HAC/landfill/PDFs/Landfill\\_2001\\_ch2mod.pdf](https://www.atsdr.cdc.gov/HAC/landfill/PDFs/Landfill_2001_ch2mod.pdf)  
<sup>2</sup> Vallero, (2019). *Air Pollution Calculations*: <https://www.sciencedirect.com/topics/earth-and-planetary-sciences/global-warming-potential>

# ABOUT THIS POLICY BRIEF

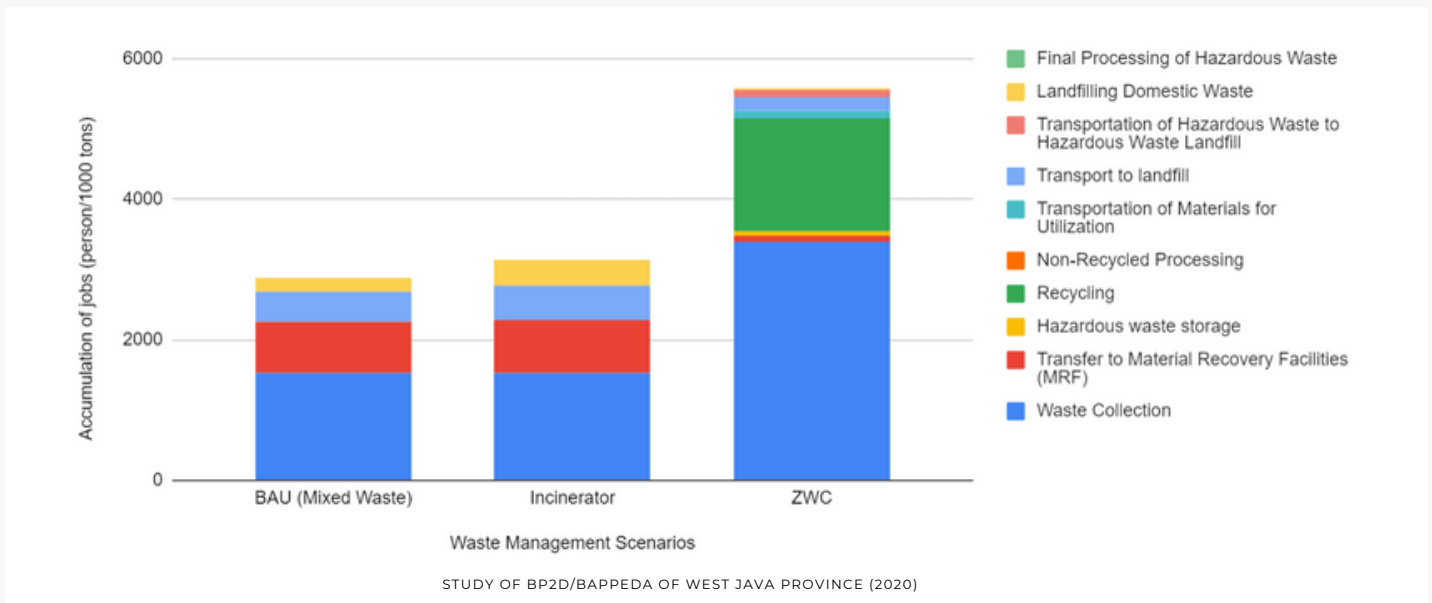
Of the three policy scenarios studied, the **waste management policy that focuses on disaggregation and recycling** is the most effective in reducing GHG emissions and **has other benefits**, including:

- 1. Improve soil quality:** absorb carbon better, withstand floods and droughts, and reduce the need for irrigation and tillage.
- 2. Agricultural independence** from chemical fertilizers: study shows that composting can increase soil fertility and productivity. It can be an alternative to chemical fertilizers.
- 3. Create jobs:** the reuse, recycling, and remanufacturing processes can create productive jobs (as shown in the bar chart below).

AZWI and GAIA researched three waste management policy scenarios that aim to reduce greenhouse gas (GHG) emissions. The study was based on a case study of GHG emissions potential in Bandung City in 2030, calculated from the amount of waste generated shown as follows.

Waste Management	Emission						Total Emission
	Landfill	Incineration	Composting	Recycle	Energy Recovery	Source Reduction	
Business as Usual	749,943	57	1,749	-18,552			<b>733,197</b>
Incineration	39,644	447,864	1,352	-35,329	-141,038		<b>312,493</b>
Zero Waste	174,515	0	54,204	-118,335	-17,848	-16,474	<b>76,062</b>

STUDY OF YPBB AND GAIA (2022)



STUDY OF BP2D/BAPPEDA OF WEST JAVA PROVINCE (2020)

## BEST PRACTICE: BANNING ORGANIC WASTE TO LANDFILL IN SEOUL

Seoul has banned organic waste from landfills since 2005 and has succeeded in keeping around 90% of organic waste from being processed in landfills or incinerators and this has finally been implemented in 16 cities and other provinces.

<https://www.japantimes.co.jp/news/2023/06/15/asia-pacific/south-korea-food-waste-good-use/>  
<https://www.pbs.org/newshour/show/policies-helped-south-koreas-capital-decrease-food-waste>

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