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Intended Nationally Determined Contributions (INDCs) for Indonesia in (Municipal Solid) Waste/MSW Sector

by:

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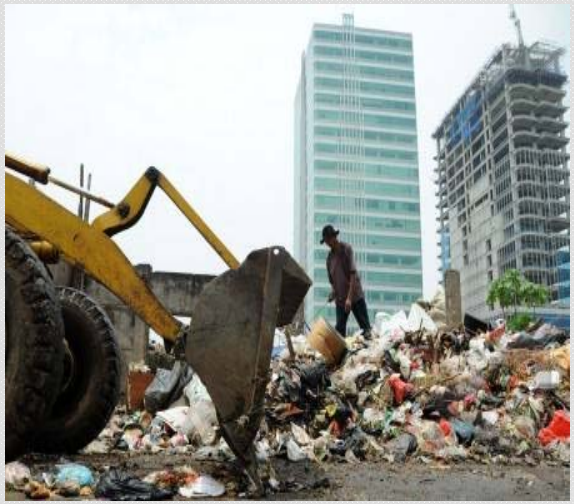
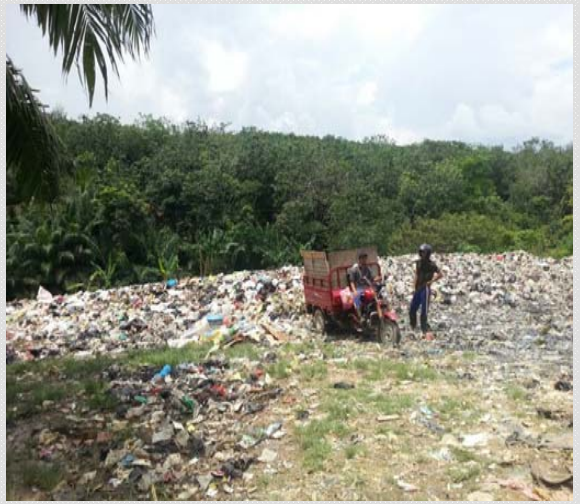
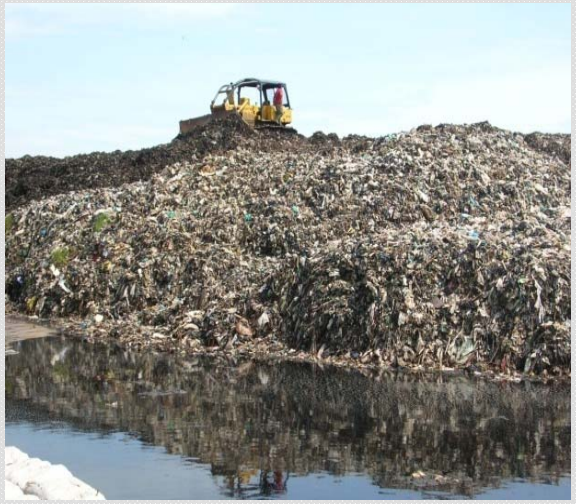
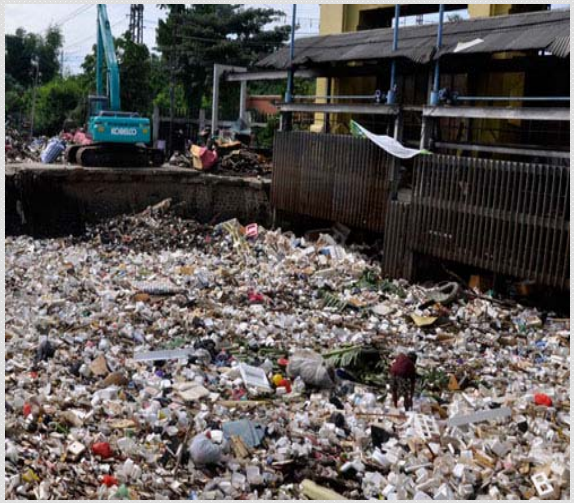
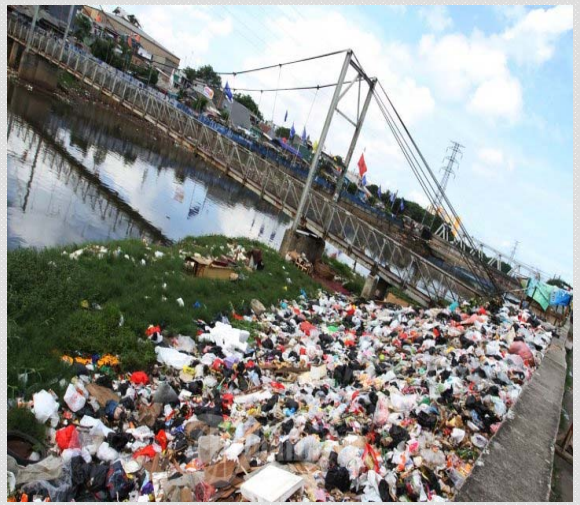
Existing Condition of MSW Sector in Indonesia-(1)



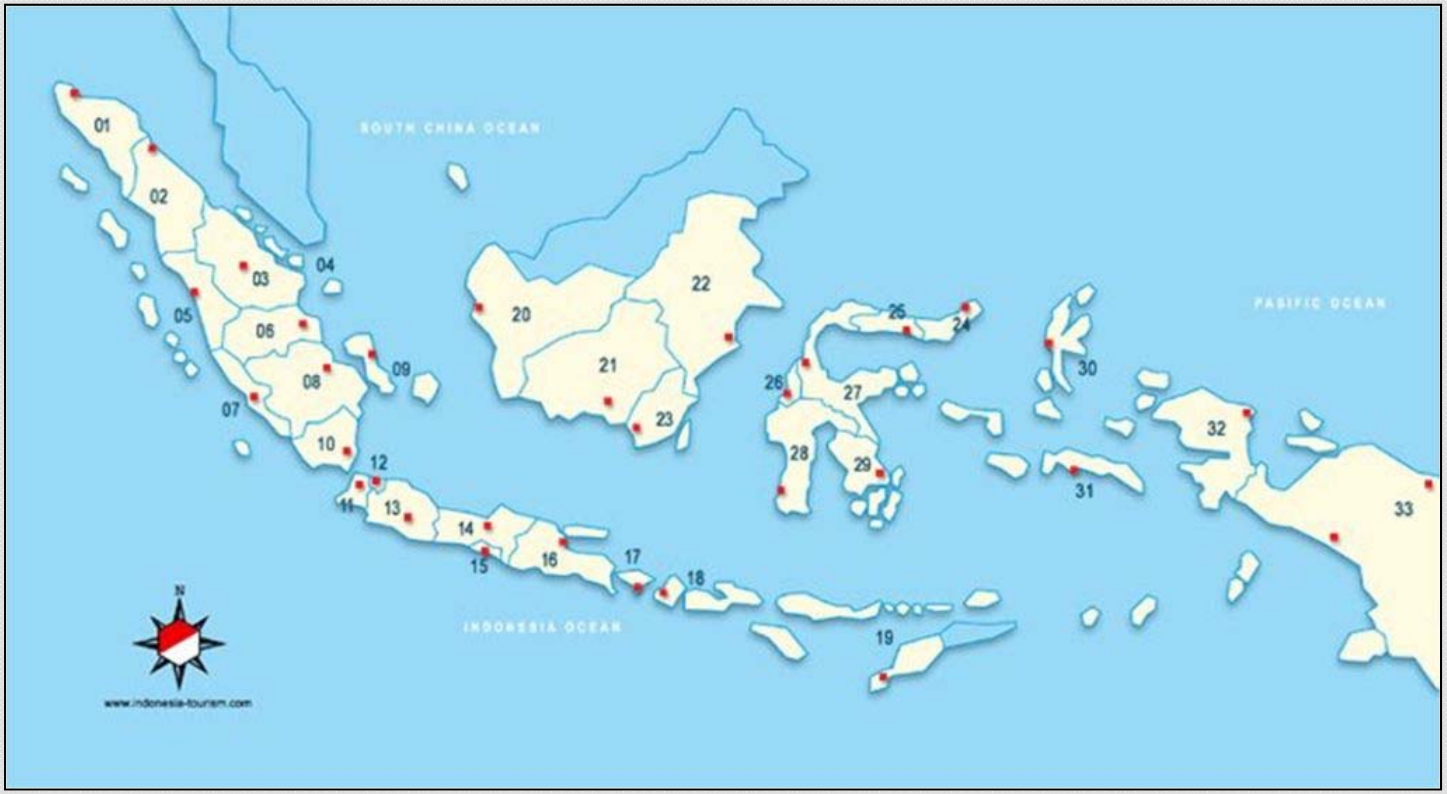








Existing Condition of MSW Sector in Indonesia-(2)



Access*	2010	2013	2014
Rural areas	73.70 %	72.60 %	82.00 %
Urban areas	87.40 %	87.00 %	91.43 %
National	80.50 %	79.80 %	86.73 %

* quantities of served population in term of tackled MSW at the source level

Conditions for Formulation the INDCs

1. Current national policy & target (universal access/100-0-100) by 2019
2. Bound regulations and controlling the implementation
3. Boost the Municipalities' commitment to comply
4. Standardize the institutional hierarchy at the Municipalities
5. Budget availability
6. Technology that suitable for Indonesia's condition
7. Public-private-research institution involvement
8. Willingness to generate the specific emission factor for Indonesia

Roadmap to Achieve Universal Access-(1)

required additional quantities of infrastructures (total sharing)							
		2015	2016	2017	2018	2019	total
MSW carts	(units)	7,690	15,380	30,760	15,380	7,690	76,899
MSW trucks		1,282	2,563	5,127	2,563	1,282	12,816
TPS 3R*		4,746	9,491	18,982	9,491	4,746	47,456
TPST*		162	323	646	323	162	1,616
TPA sampah*	(hectares)	87	175	350	175	87	875
software	(activities)	509	509	509	509	509	2,545

required additional quantities of infrastructures (national budget sharing)							
		2015	2016	2017	2018	2019	total
TPS 3R	(units)	124	165	248	248	164	949
FPSA		0	48	73	73	48	242
TPA sampah	(hectares)	21	146	219	219	147	752
software	(activities)	509	509	509	509	509	2,545

* Notes:

- ✓ TPS 3R : decentralized MSW treatment plant (communal base)
- ✓ TPST : decentralized MSW treatment plant (institutional base)
- ✓ TPA sampah : centralized MSW treatment plant/landfill (institutional base)

national budget sharing APBN: TPS 3R ; 2 %, TPST ; 15 %, and TPA sampah ; 86 %

Roadmap to Achieve Universal Access-(2)

roadmap additional investment cost of infrastructures (total sharing)									
		2015	2016	2017	2018	2019	total		
MSW carts	(IDR billions)	38	77	154	77	38	384	66.331	25.642 %
MSW trucks		641	1,282	2,563	1,282	641	6,408		
TPS 3R*		2,610	5,220	10,440	5,220	2,610	26,101		
TPST*		1,777	3,555	7,109	3,555	1,777	17,773		
TPA sampah*		1,312	2,624	5,248	2,624	1,312	13,120		
software		509	509	509	509	509	2.545		

roadmap additional investment cost of infrastructures (national budget sharing)									
		2015	2016	2017	2018	2019	total		
TPS 3R	(IDR billions)	68	91	136	136	91	522	17.009	
FPSA		0	528	803	803	528	2,662		
TPA sampah		315	2,190	3,285	3,285	2,190	11,280		
software		509	509	509	509	509	2,545		

* Notes:

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- ✓ TPST : decentralized MSW treatment plant (institutional base)
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national budget sharing APBN: TPS 3R ; 2 %, TPST ; 15 %, and TPA sampah ; 86 %

Challenges and Problem Solving through Bottom-Up INDCs

Exhausting data gathering/ analysis method

Several cases of exagerrated GHG emission (MSW conversion to energy) estimation

Inadequate processed data and information

Misleading feasibility study result and its interpretation

Might mislead the formulation of policy-strategy

Might surface the law breach by the government officers

1. Simplify the method
2. Determine emission factor for Indonesia
3. Propose at the international level
4. Determine bottom-up calculation

Calculation

infrastructures	quantities	design capacity	beneficiaries	annual treated MSW	annual potential tackled GHG
TPS 3R	949 units	1,000 inh./unit	949,000 inh.	2.078×10^{-4} Gton MSW	1.687×10^{-4} Gton $CO_{2(eq)}$
TPST	242 units	16,600 inh./unit	4,017,200 inh.	8.797×10^{-4} Gton MSW	7.143×10^{-4} Gton $CO_{2(eq)}$
TPA sampah	752 hectares	57,400 inh./hectare	43,164,800 inh.	9.453×10^{-3} Gton MSW	7.675×10^{-3} Gton $CO_{2(eq)}$
				$\sum$	
			annual potential tackled GHG		8.558×10^{-3} Gton $CO_{2(eq)}$

* Notes:

- ✓ TPS 3R : decentralized MSW treatment plant (communal base)
- ✓ TPST : decentralized MSW treatment plant (institutional base)
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- ✓ MSW generation rate is 0.6 kilograms/inh./day
- ✓ Lifetime of TPA sampah is 5 year/landfill cell
- ✓ Garuda Super Coefficient as the proposed emission factor from MSW in Indonesia: 0.812 kg $CO_{2(eq)}$/kg (wet weight) of MSW (mixed)

Proposed INDCs

1. Ease the Municipalities and Ministries to gather and process data
2. The proposed GHG emission tackled would be quantified as “potential”
3. Municipalities will operate the MSW treatment plants according to SOP
4. The potential tackled GHG can be derived from various types of treatment plants
5. MSW treatment plant tackles the highest rate-smallest footprint-affordable costs
6. Proposing annual potential GHG emission tackled 8.558×10^{-3} Gton $CO_{2(eq)}$, post 2019

thank you