



IMPLEMENTATION OF CO-FIRING IN A COAL POWER PLANT: UTILIZING BIOMASS RESIDUE AND COAL FINES WITH TOSS

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Comestoarra.com was appointed by The Ministry of Environment and Forestry of Indonesia to create Detail Engineering Design (DED) of TOSS. On September 2021, the DED was published to the public;

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Our challenges: Earth's temperature has risen

Waste Management Problems

Methane gas release from dumping organic waste and biomass residues. It 28 more harmful than carbon dioxide

Urban Transportation

Transportation sector produces roughly 23 percent of the global CO2 emissions from fuel combustion.

Fossil Fuel based power plant

Most of power plant in the world has dominated by fossil fuel

Illegal activities

Illegal logging, illegal mining, illegal fishing



We have to reduce urban pollution and emission

We need more urban green space

OVER CAPACITY LANDFILLS

1. We have to stop waste trucking to the landfill;
2. We have to solve waste management problems communally.



ELECTRIC VEHICLE ECOSYSTEM, ELECTRIC PUBLIC TRANSPORTATION, AND RENEWABLE ENERGY INFRASTRUCTURE MUST BE SET UP

The intermittency, high investment, and land acquisition issues in implementing existing renewable energy can be solved by creating distributed hybrid system.



We have to retire fossil fuel power plants

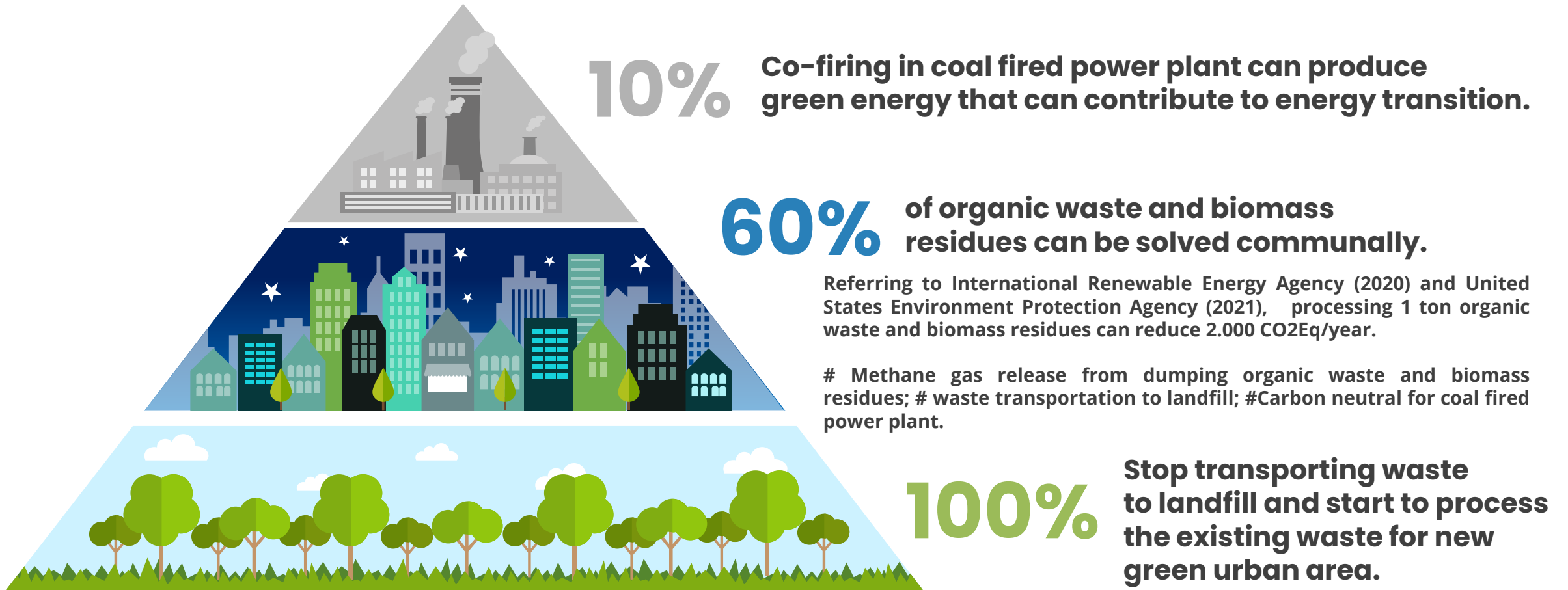
ROAD TO ENERGY TRANSITION

With the proper methodology and technology, We can maximize the use of fossil fuel power plant to absorb solid renewable fuel.





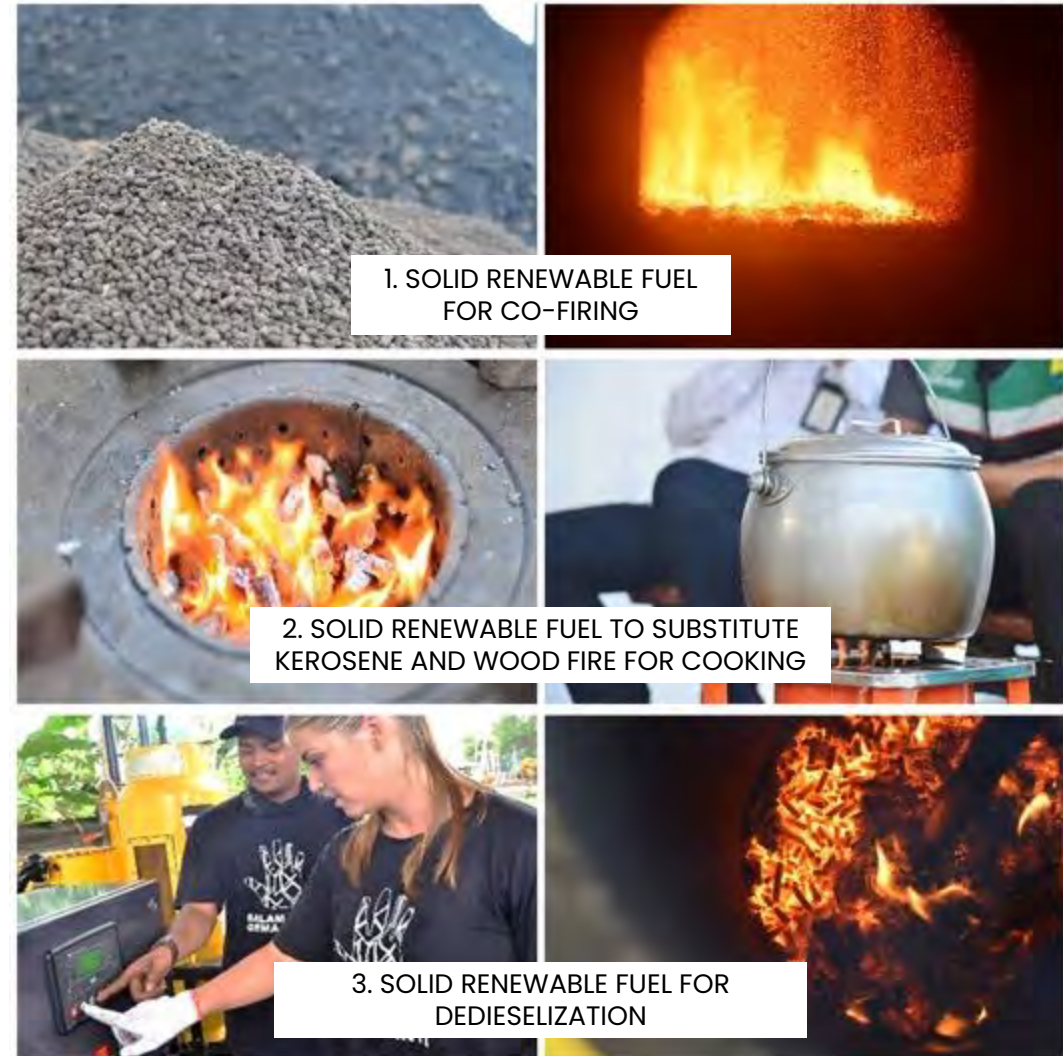
IF COAL FIRED POWER PLANT MUST BE SHUT DOWN, WHY DON'T WE MAXIMIZE IT TO SOLVE INDONESIA WASTE MANAGEMENT PROBLEMS?





PROCESSING ORGANIC WASTE AND BIOMASS RESIDUES TO SOLID RENEWABLE FUEL

SOLID RENEWABLE FUEL TO CONTRIBUTE IN ENERGY TRANSITION





CO-FIRING IMPLEMENTATION STAGES IN KABUPATEN ENDE

Testing the 20 sample of RDF to the laboratories

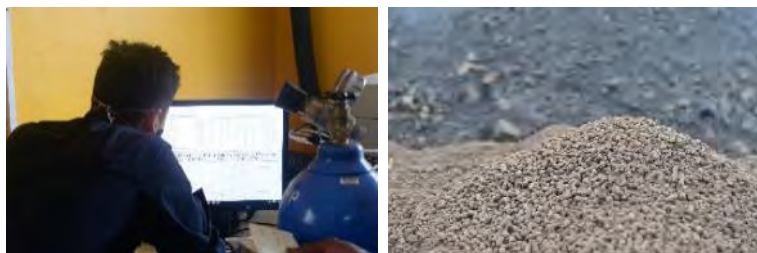
(SEPTEMBER 2020)



ADDITIONAL CONTRACT

Reliability Run test of co-firing in Ropa Steam Power Plant. At this step, PT PLN (Persero) decided to test 5 percent co-firing within 3 days.

(JANUARI 2021 DAN MEI 2021)



OCTOBER 2021

Comestoarra.com appointed as the consultant to realize the commercialization of co-firing in Ropa coal fired power plant. In the first year, the contract started from 1700 tons RDF per year between local SME and PT PLN (Persero).

Ropa coal fired power plant is the pioneer in creating commercialization contract of co-firing in Indonesia. The signed contract has been published to the public and attended by several technical ministries.



FUEL ANALYSIS RESULTS FROM KABUPATEN ENDE

				FUEL BLENDING COAL FINES AND BIOMASS			
TEST	BASIS	UNIT	Coal	JUN 2021	OKT 2021	NOV 2021	DES 2021
GENERAL ANALYSIS							
Total Moisture	arb	%	23,70	26,32			
Moisture in analysis	adb	%	13,61		11,54	11,39	11,17
Ash content	adb	%	4,80	16,11	19,06	19,97	18,74
Volatile Matter	adb	%	39,10	48,75	55,97	55,45	56,17
Fixed Carbon	adb	%	42,49	35,14	24,97	24,57	25,09
Total Sulphur	adb	%	1,88	0,35	0,17	0,30	0,33
Gross Calorific Value	adb	kcal/kg	5.831	5.207	4.338	4.427	4.485
	arb	kcal/kg	5.150	3.837	3.837	3.923	3.984
ULTIMATE ANALYSIS							
Carbon	adb	%	60,28	56,11	44,94	44,89	45,05
Hydrogen	adb	%	4,30	4,19	4,69	4,65	4,81
Nitrogen	adb	%	1,31	0,83	0,73	0,76	0,69
Oxygen	adb	%	13,82	22,41	30,41	29,49	30,39



COAL POWER PLANT EMISSION ESTIMATION

based on the laboratory test results, emissions estimation from cofiring activities can be calculated as follows:

	COAL	FUEL BLENDING JUN 2021	FUEL BLENDING OKT 2021	FUEL BLENDING NOV 2021	FUEL BLENDING DES 2021
	EMISSION BEFORE CONTROL (grams/hour per 1 kg fuel/hour)				
CO₂	2.210,27	2.014,19	1.884,09	1.883,55	1.887,33
NO₂	7,86	6,13	6,00	6,09	5,89
SO₂	37,60	21,89	20,41	21,64	21,93
TSP	38,40	76,15	91,28	94,75	90,19

Note:

1. Calculation based on 1,000 gr fuel / day
2. NO₂ is assumed to be equivalent to 60% of N₂ from the reaction product
3. TSP or fly ash is assumed to be 80% of the total ash content generated







THANK YOU FOR YOUR ATTENTION

FOR MORE INFORMATION:
PLEASE CONTACT +628558700084
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Youtube: [Comestoarra.com](https://www.youtube.com/Comestoarra.com)



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