For Low CAR Net 6th Annual Meeting

"Barriers, Opportunities & Challenges faced by a private sector developer in CDM & JCM schemes "

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3. *Gikoko's experience & lesson learnt; JCM*
4. *Proposed projects in Palm & MSW management*
5. *Recommendations*

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WHY POLICY FOR FINANCIAL APPROPRIATE SUPPORT IS NECESSARY FOR PROJECT IMPLEMENTATION?

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Importance of providing appropriate subsidies

1. CER price Euro 10 (2012 Dec31) to US$2/ton, WB, PAF, 2017)
2. FIT come and gone;
   Landfill Gas Electricity rate
   US$ 14.45/kW. Hour to $6.51/kW.hour
3. Indonesian Energy Ministry does not internalize the externalized cost of coal fired power plants
4. Only State Owned Enterprise (SOE) and Private Sector with access to overseas concessionary loans signed PPA with PLN in Sept 2017 (exception; Palm biogas&biomass)

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CDM

Started as Clean Development Mechanism but became very Difficult& Complicated

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Clean Development Mechanism

- Gikoko x4 UNFCCC registered Landfill Gas flaring projects, (large scale)

- World Bank & ADB advanced approx. 25% of Emission Reduction Purchase Agreement (ERPA) purchase value in loans to be repaid in Certified Emission Reduction (CERs)

- Audit process;
  1. Validation to Project Registration (less than 1 year)
  2. Verification of Monitoring Reports then issuance (3 years!!)
  3. Issuance then payment (3 months)
  4. Result based; advanced payment for CERs loans

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Gikoko Bekasi LFG UNFCCC Project 2509 registered July 2009

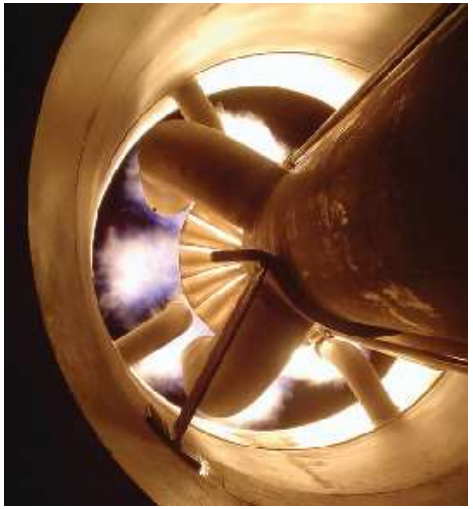
1. High calories hydro-carbon=Commercial energy resource

2 Methane is a Potent Green House Gas = Carbon offset eligible

3. Bacterial decomposition of leached out nutrient from organic waste

4. High methane gas content; LFG 50% vs. 81% good gas fields

Landfill Gas; High GWP and calorific & commercial value; listed in NDC



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Value creation from discarded waste biogas to electricity

Organic & Plastic Waste

Household Waste

1.Free of charge feedstock delivery by local government

2. Natural Biogas Generation in landfill cells

3. Renewable biogas conversion to electricity using gas engine genset

4. Long Term Concession = Long term monthly cash income!

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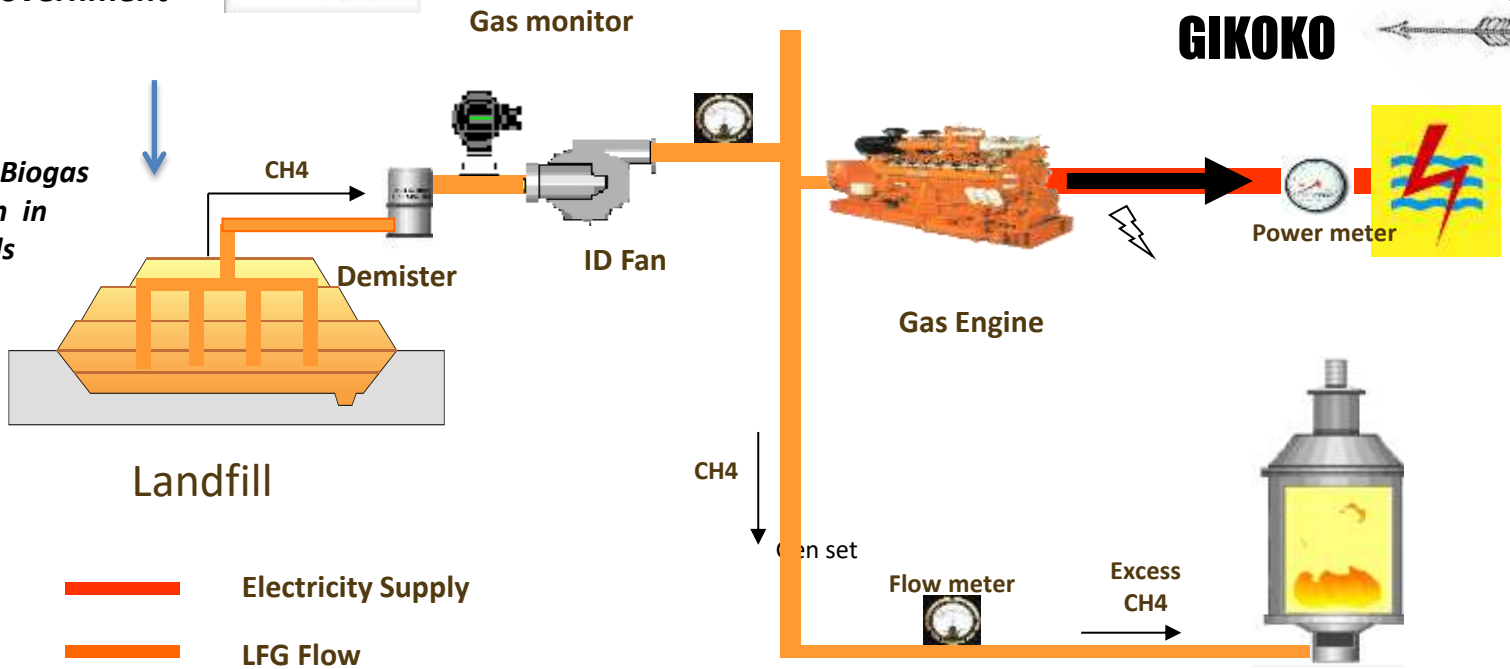

Gaswells& pipeline+ gensets need funds

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Decent FIT was announced, increased and then removed.

- Government regulation no 18, 2008 mandates payment of tipping fee.
- Feed in Tariff "Zero Waste" thermal technology; US$18.77/kW.hour
- Tipping fee is set for major cities (US$15/ton ~ 30/ton, US$50/ton for Jakarta)
- Electricity tariff capped at 85% of PLN production costs (new regulation no. 49, 2017)
- US$6.1 cent/kW.hour for LFGtE in Jawa.

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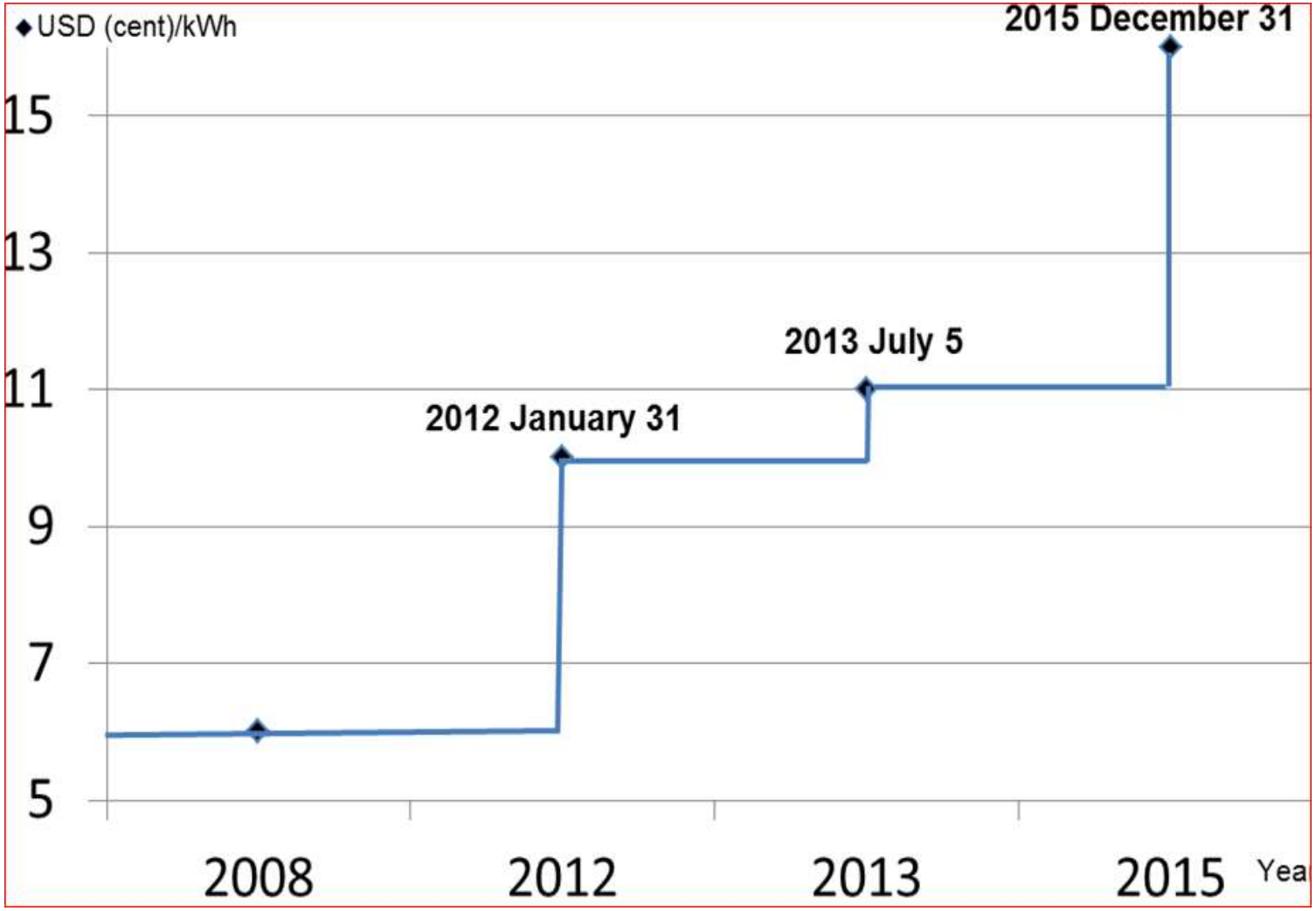
Feed in Tariff for MSW to Energy;



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Major challenges faced by project developers

1 PLN cost of production for <u>Coal</u> as benchmark

(Lack if internalization of external costs)

2 Mindset of Municipal leaders and managers;

"Recyclers can make money so we do not need to pay!"

(Decent waste management requires expenditures)

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JOINT CREDITING MECHANISM
JCM

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Japanese participant buys equipment for Indonesian subsidiary

- Kawasaki Steam Absorption Chillers

- One Through Kawasaki Boiler

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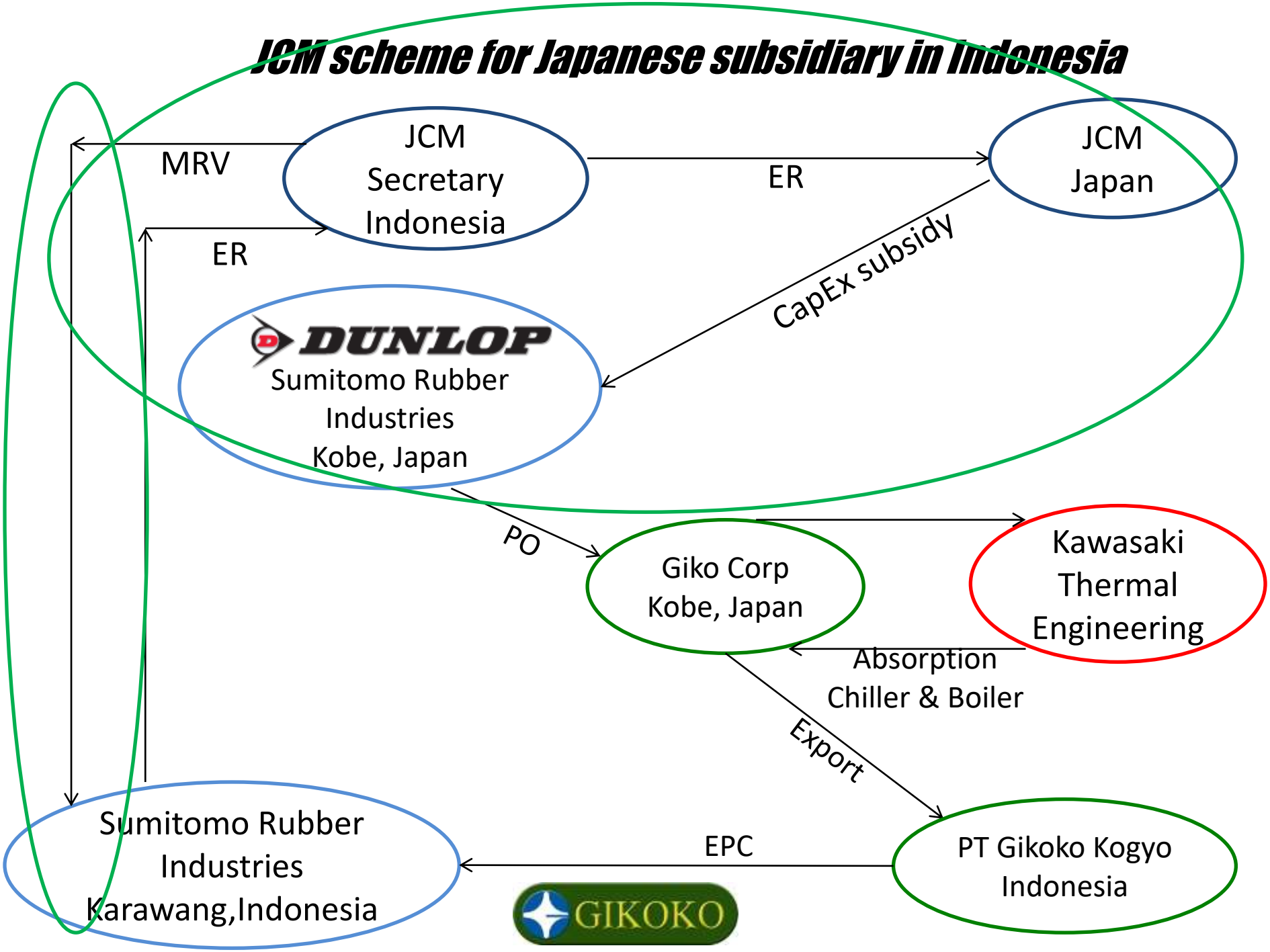
JCM scheme for Japanese subsidiary in Indonesia



How does an Indonesian company get access to JCM subsidy?

- What if an Indonesian company does not have capital related company in Japan?

- What if the Japanese equipment manufacturer or EPC contractor does not wish to become participant?

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Gikoko JCM EPC scheme for Indonesian CPO mill Waste to Energy proposal

Converting EFB to charcoal for additional electricity generation fuel

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POME to biogas listed in Nationally Determined Contribution (NDC)

- 1,000 ton FFB per day CPO mill produces 500m3 of POME (Palm Oil Mill Effluent)
- BOD 40,000~600,00 mg/liter
- Takes 7 weeks of Aerobic Digestion to bring down to 150ppm /liter
- Regulation calls for 100mg/liter
- And Malaysia will tighten to 20mg/liter
- US$5million in CapEx for 2MWe

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15 Hectares of lagoon, 7 weeks

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Open burning of EFB is illegal but frequent in absence of better technology for wet and tough fiber

- Open burning illegal
- Incinerator for potassium rich fertilizer is illegal for new mills under new regulation.
- Co-compost of EFB with POME is not economic (US$100/ton cost)

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Palm Biomass Waste (EFB) carbonization

Wet & EFB, 65% water

EFB charcoal , LHV 20MJ/kg

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Innovative carbonizer at Gikoko.
Emission Reduction through operational energy efficiency

Japanese Ministry of Environment Innovation Low Carbon Technology transfer subsidy 2015~2017

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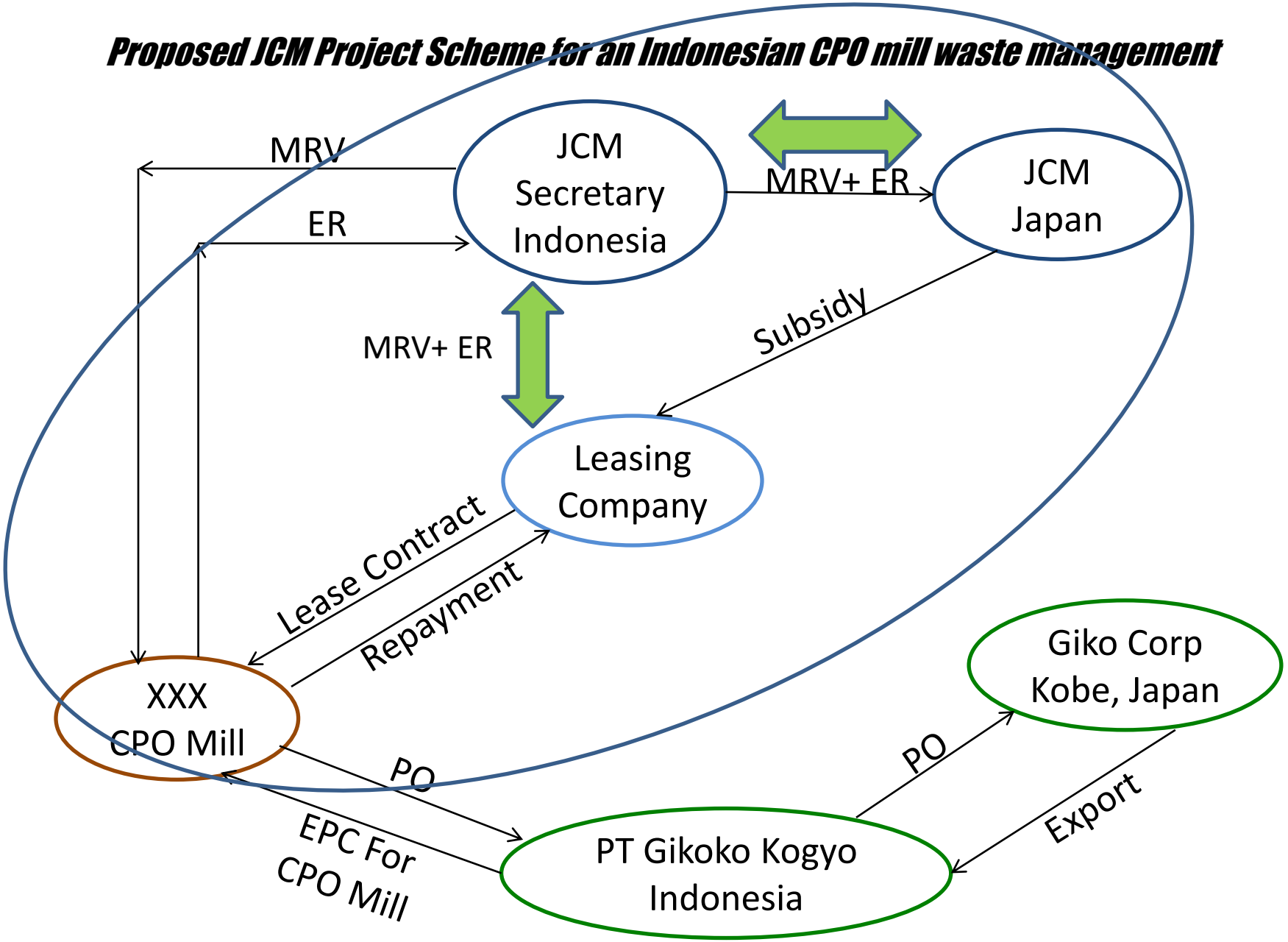
Proposed JCM Project Scheme for an Indonesian CPO mill waste management



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Recommendation for MSW management JCM model

- More city to city cooperation
- City administration maintain major operation
- CapEx and OpEx funding by municipal government (do not rely on private sector investment alone as in earlier invitation to tender.)
- Leasing of operational hardware equipment
- Operational contract from city governments to equipment supplier/operators

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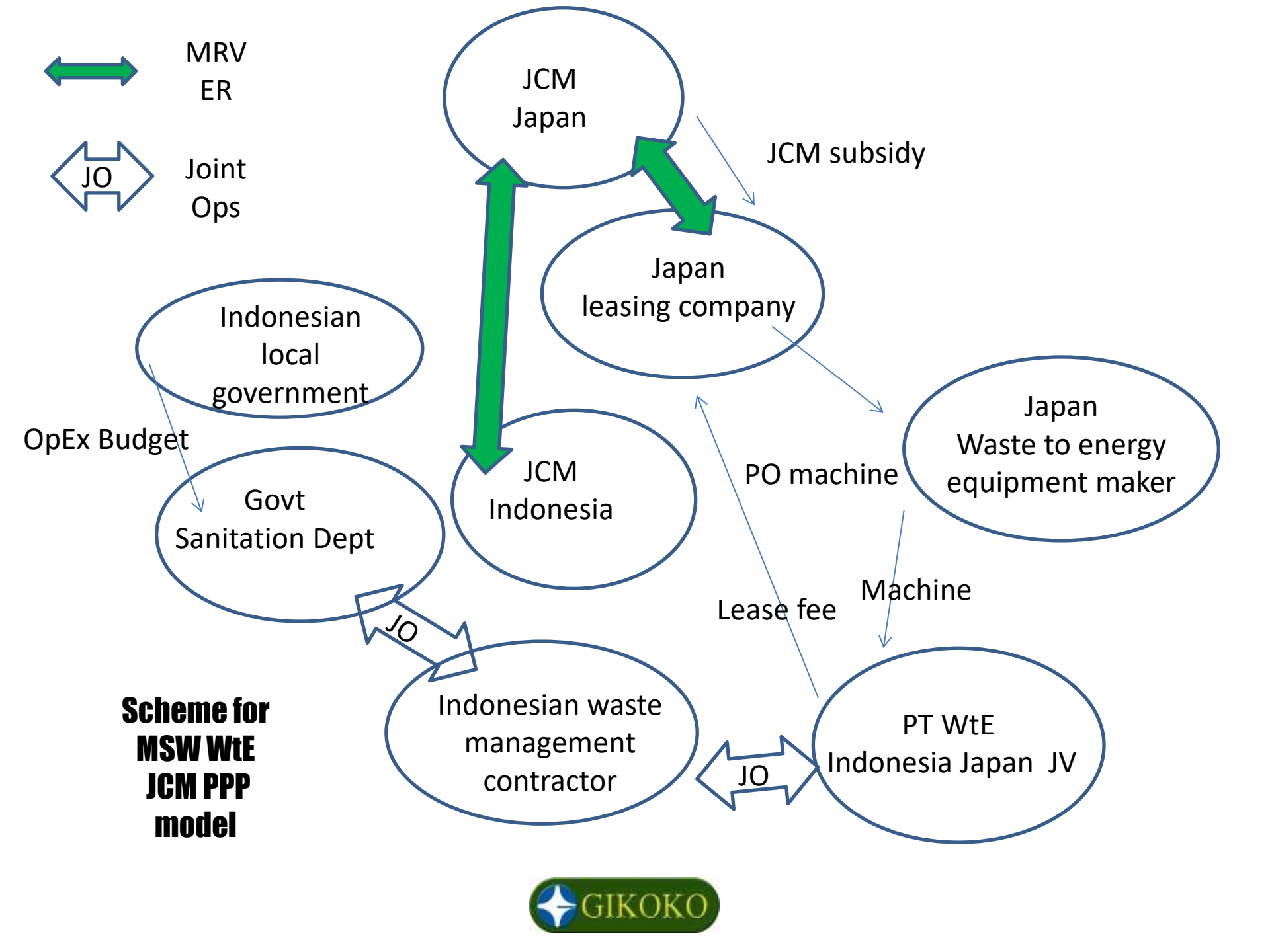
MRV
ER
JO
Joint
Ops
JCM
Japan
JCM subsidy
Japan
leasing company
Indonesian
local
government
OpEx Budget
Govt
Sanitation Dept
JCM
Indonesia
PO machine
Japan
Waste to energy
equipment maker
Lease fee
Machine
JO
Indonesian waste
management
contractor
JO
PT WtE
Indonesia Japan JV
Scheme for
MSW WtE
JCM PPP
model
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PRIVATE SECTOR'S RECOMMENDATIONS

Only positive cash-flow will lead to investment in sustainability

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Private Sector's Fiduciary Duty demands profits

- Appropriate capital expenditure subsidies by host cities
- Local banks make concessionary project finance with Ministry of Finance regional subsidy & grants in local budgets
- Certainty for obtaining PPA and put floor for tipping fee
- Operation by the city under private sector expertise guidance.
- Need for Indonesian government innovation and RE subsidies.
- Simplify administrative procedure with standardized forms for claims & reimbursements, with English language versions

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Palembang open dump in 2006 before CDM

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CDM lead to improvements in MSW managements, what will JCM achieve?

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Thank you for your attention;

JCM Indonesia - Japan

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