# Attachments

- 1. Plant layout
- 2. On-site seminar documents
- 3. Minutes of meeting

1. Plant layout





2. On-site seminar documents

#### សិក្ខាសាលាស្តីពី

# ការលើកកម្ពស់ កិច្ចសហការរវាងទីក្រុង និងទីក្រុងក្នុងការកាត់បន្ថយកាបូននៅតំបន់អាស៊ី

## នៅសណ្ឋាគារ កាំបួឌីយ៉ាណា រាជធានីភ្នំពេញ ថ្ងៃទី ០៧ ខែ កុម្ភៈ ឆ្នាំ ២០១៨

# គាំទ្រដោយ ក្រសួងបរិស្ថានជប៉័ន

## SEMINAR

ON

## PRMOTING "CITY-TO-CITY COLLOBORATION ON LOW CARBON DEVELOPMENT IN ASSIA" PROGRAM

#### AT CAMBODIANA HOTEL ON FEBRUARY 7, 2018

#### SUPPORTED OF MINISTRY OF ENVIRONEMTN JAPAN (MOEJ)

Time	Duration	Description	Speaker	Note
8:30	30 min	Registration ចុះឈ្មោះសិក្ខាកាម		
9:00	5 min	Kojimagumi Co., Ltd on behalf of Ministry of Environment Japan and Kanagawa Prefecture, as JCM project proposer Starting the Seminar the purpose of the Seminar. <i>пилици ปี แต่ ปลาย ปัญญาแลง</i>	Mr. Kojima Masaya	
9:05	25 min	Presentation of Phnom Penh Department of Environment         - City-to-city collaboration on low carbon development         - Question and Answer         บรชนูกสูงขณ่ยสู้งขรัฐกร         - กิฐณบการสายชี่เกุน ริษชีกูกุมกุมสารสารขฐานการต่อมูนเกมูร         - ผ่ลูกา ธิษยายู้ชาว	Mr. Keat Rangsey	Or Officer join seminar on Jan, 2018.
9:30	15 min	Coffee break வீராரிவானபாவரும்		

9:45	45 min	Presentation by JCM Project proposer, Kojimagumi Co., Ltd.         - Introduction of JCM scheme, and JCM Project.         - Introduction of the proposed JCM project "The establishment of Organic Waste Based Methane Fermentation/ Power Plant in Phnom Penh City"         - Question and Answer         บรชสูมตุมเมาะหมุศาญรีญ่หมุยคน JCM (กุษยาวัต กูซีย่หมูย         - กทเฉกรหลีที่สังสุดหมุยคน JCM (กุษยาวัต กูซีย่หมูย         - กทเลกรหลีที่สังสุดหมุด JCM สินสหมุยคน JCM ๆ         - เมษตรีหลีหลังสังสรหมูคน JCM เสนอกรณฐีญ์ "กรษณสุดหมุยๆกุษตร มีเกษตรูกษาคณ ถึงเฉกญ่ณฑิกษา เรากศตลีกู้เกต          - เมษตรีหลีหมูยคน JCM เป็นการหมูญญ์ "กรษณสุดหมุยๆกุษตร มีเกษตรูกษาคณ ถึงเฉกญ่ณฑิกษา เรากศตลีกู้เกต	Mr. Kobayashi Takashi Mr. Higuchi Tadashi	
10:30	45 min	Discussion - Overall issues related to the topic of the seminar - The proposed plant m ເຖິກຖູກຕຶບຫຼາງເອງອາກ່ອນສື່ນເນິງກາດກາ និងកំពាងដែលបានស្នើសុំ		
11:15	5 min	Closing Speech	Mr. Kojima Masaya	
11:20	10 min	Photo Graphing Session ாச்சுர்கள்		
11:30		Lunch (Buffet inside to hotel) តិសារកាហាកិច្ចត្រង់		

Attachment-8

រាជធានីភ្នំពេញ,ថ្ងៃទី ២២ ខែ មករា ឆ្នាំ ២០១៨

សូមគោរពជូន

ឯកឧត្តម អភិបាល នៃគណៈអភិបាលរាជធានីភ្នំពេញ

កម្មវត្ថុ សំណើសុំចាត់បញ្ជូនមន្ត្រីជំនាញចំនួន ០៣រូប ដើម្បីចូលរួមសិក្ខាសាលាស្តីពី កិច្ចសហការគ្នារវាងទីក្រុងនិងទីក្រុងក្នុងការកាត់បន្ថយការបំភាយនៃសមាសភាពកាបូនពីការគ្រប់គ្រងសំណល់រឹងក្នុងរាជធានី ភ្នំពេញ។

តបតាមកម្មវត្ថុខាងលើ ខ្ញុំបាទមានកិត្តិយសសូមជម្រាបជូន ឯកឧត្តមអភិបាល មេត្តាជ្រាបថា៖ ដោយមានការគាំទ្រផ្នែកហិរញ្ញវត្ថុពីក្រសួងបរិស្ថានជប៉ុន ក្រុមហ៊ុនក្លូជីម៉ាហ្គូមី

(Kojimagumi) តាមរយៈការសម្របសម្រួលពីអង្គការកែច្នៃសំរាមនិងការសិក្សាទៅកម្ពុជា ហៅកាត់ថា COMPED ដើម្បីរៀបចំ សិក្ខាសាលាស្គីពី

"ការកាត់បន្ថយកាបួនពីការគ្រប់គ្រងសំណល់រឹងក្នុងរាជធានីភ្នំពេញ<sup>"</sup>។ សិក្ខាសាលាខាងលើនឹងប្រព្រឹត្តទៅនៅថ្ងៃទី ០៨ ខែ កុម្ភៈ ឆ្នាំ ២០១៨ ដលាម៉ោង ៨ ៣០នាទីត្រីក នៅសណ្ឋាគារកាំបូឌីយ៉ាណា។ គោលបំណងនៃការរៀបចំសិក្ខាសាលានេះ ដើម្បីបង្ហាញពីបច្ចេកវិទ្យាកែច្នៃអគ្គិសនីពីសំណល់ និងលទ្ធភាពដែលអាចធ្វើទៅបាននៃគម្រោងនេះនៅក្នុងរាជធានីភ្នំពេញ ក្នុងការកាត់បន្ថយការបំភាយនៃសមាសភាពកាបួន ពីការគ្រប់គ្រងសំណល់រឹងទីក្រុង។

អាស្រ័យដូចបានជម្រាបជូនខាងលើ សូម ឯកឧត្តមអភិបាល នៃគណៈអភិបាល មេត្តាពិនិត្យ និងសម្រេចចាត់បញ្ចូនមន្ត្រីជំនាញចំនួន ០៤រូប ដើម្បីចូលរួមសិក្ខាសាលាដោយក្តីអនុគ្រោះ។

សូម ឯកឧត្តមអភិបាល មេត្តាទទួលនូវការគោរពង៍ខ្ពង់ខ្ពស់អំពីខ្ញុំបាទ៕

លោកប្រធានក្រុមហ៊ុន កូជីម៉ាហ្គូមី ខូអិលធីឌី

សូមភ្ជាប់ជូន៖

🗖 របៀបវារៈនៃអង្គសិក្ខាសាលា

ទូរស័ព្ទទំនាក់ទំនង៖

លោក យឹម តុឡោង ០៧៧៦៧២២៨៨



## Attachment-10







# Our Proposed Plant ( Concept)-Video



is Prefecture Cooperation Project.



- Consultation on our feasibility study on the establishment of the plant
- Seeking for corporation



# Local Related Parties Consultation-2

 Local government officer working on Solid Waste management, (1)Department of Solid Waste Management of MOE (2)Phnom Penh Department of Environment

- MOE Policy / Strategy Plan on solid waste
- Consultation on our feasibility study on the establishment of the plant
- Seeking for corporation/ support on establishment of the plant



against Prefecture Cooperation Project.

# Local Related Parties Consultation-3

- Local authority working on Power, EAC and EDC
  - Consultation on legal framework related to establishment of the plant.
  - Negotiating of on Power Purchase Agreement (PPA)
  - Seeking for cooperation/ support











3. Minutes of meeting

Minutes of the 1st inspection consultation

AC) Answers from Cambodia

QC) Queries from Cambodia

AJ) Answers from Japan

QJ) Queries from Japan

Date and time	August 8, 2017 (Tuesday) 9:40 - 10:50
Venue	Phnom Penh Capital, Department of Environment
Participants from	Director Keat Rangsey, M.Engineer Khim Nora, others
Cambodia	
	Kojima, senior managing director (Kojimagumi), Kobayashi, president
	(Cambodia branch, Kojimagumi), Mr. Toleng
	Higuchi, department manager (Chiyoda Kenko Co., Ltd.), Sasaki,
	deputy director (Mizuho Information & Research Institute, Inc.)

Introduction of participants

Expressing appreciation and explanation of today's agenda:

Expressed appreciation about the visit to Japan 2 weeks ago. Before starting actual survey activities about waste, we come to here, the department of environment.

Explanation of the project: explanations about JCM, City to City, methane fermentation using general wastes, electric power generation, supply of heat, and the project of compost supply. Video OWS show: Introduced a waste treatment facility in Netherlands, showing a movie. Commentary: Currently, the amount of waste is 2000 t/day in Phnom Penh, but this will be able to be reduced to about 500t if adopting the facility shown in the movie. Emission gas from a gas engine has high temperature, therefore, the heat can be utilized effectively, for example, if building a brick plant next to the facility.

Q&A)

QC) What is the heat?

- AJ) The heat is generated at the same time of electric power generation. Additionally, the CO2 with high concentration can be collected, so it can be utilized to grow crops or others. (It took a sufficient time for questions and answers about the technology.)
- QJ) Question about the flow of wastes
- AC) We have enough knowledge about how to collect wastes. However, considering the transporting distance, it is not reasonable to collect and transport wastes over the District,

from north to south or the opposite ways. We consider that, if proposed plants are built in each district, there will be rather benefits both for Phnom Penh Capital and CINTRI who is in charge of gathering, transportation, and treatment of wastes. Just my personal idea, there is an unused 2-ha land in the Dangkao district, so what do you think that a plat for the Dangkao district is built here?



Map of Phnom Penh Capital

Date and time	August 8, 2017 (Tuesday) 11:40 - 12:10
Venue	Phnom Penh Capital, Department of Solid Waste Management
Participants from	Director Dy Kiden
Cambodia	
	Kojima, senior managing director (Kojimagumi), Kobayashi,
	president (Cambodia branch, Kojimagumi), Mr. Toleng
	Higuchi, department manager (Chiyoda Kenko Co., Ltd.), Sasaki,
	deputy director (Mizuho Information & Research Institute, Inc.)

Explained about JCM and the project to be proposed.

AC) We welcome your proposed project as the department of general wastes. Our department will take a role of a coordinator for the project. We consider that your proposed contents meet the current situation of Phnom Penh Capital the most. Also, we consider that the cooperation scheme of City-to-City is appropriate.

On the other hand, we consider that there are some issues in the project.

- Wastes are not sorted and it may be challenging to sort wastes. We consider that we will make residents sort wastes in the future.

- Additionally, we expect that Phnom Penh Capital allocate the responsibility to each district in the future.

QJ) How long time schedule do you consider about that? We have the perception that Ordinance 1135 makes each district operate the waste treatment.

AC) We consider that it will take some time. Phnom Penh Capital shows its intention to provide direct operation of the waste treatment continuously.

AC) To facilitate the project, we will cooperate in the way that the Environment department requests EDC to purchase with a high price.

In other feasible studies, they had a higher price of electric power generation and requested a tipping fee or burden of a pre-treatment cost, etc. While, we consider that this proposed project is easier to be accepted as there is no request such as a tipping fee, etc.

For our additional comment, we recommend to consult the Ministry of Economy and Finance. Preferential treatments such as VAT or others may be expected.

Date and time	August 8, 2017 (Tuesday) 14:00 -
Venue	Sustainat Green
Participants from	C.E.O SOK Vannara, Chief Engineer
Cambodia	
Kanagawa JCM	Kojima, senior managing director (Kojimagumi), Kobayashi, president
Team	(Cambodia branch, Kojimagumi), Mr. Toleng
	Higuchi, department manager (Chiyoda Kenko Co., Ltd.), Sasaki,
	deputy director (Mizuho Information & Research Institute, Inc.)

• Introduction of the project

· Q&A

QJ) The part of electric power generation in this project is less than 5 MW. A heat supply facility is also provided. There was no similar example in the past, so how should we have government approvals and licenses?

AC) EIA, there are two types. IEIA and EIA. You must take a full EIA for the waste treatment. Even if it is an intermediate treatment, as it is a treatment of wastes, EIA must be fully conducted.

It is because we need to consider measures about a bad odor or others from temporary storage of

wastes.

QJ) Please tell us about application procedures.

AC) First, apply to the Ministry of Environment. You submit the project master plan, reports on FS, technical reports (by each process of the project, warehouse (with/without a roof) to the Ministry of Environment, and the Ministry of Environment will determine the range in which the impact is evaluated.

QJ) Is it possible to predict in advance about contents of EIA? Additionally, how long should we estimate for the EIA period?

AC) It is not clearly determined in advance what and which range should be evaluated. Most of points are related to a waste incinerator. Additionally, there was no similar project that was proposed in the past.

In fact, landfill or others have been conducted without EIA until now.

• Preparation period: EIA (full: 6 moths), IEIA (3 months)

• Evaluation in the Ministry of Environment: 6 months (full), 3 to 4 months (IEIA)

• Presentation, on-site inspection

Full EIA: The Ministry of Environment determines amendments in the meeting, submit necessary documents again, and then submit amendments again based on comments from Inter ministry meeting.

QJ) How long does the contract period with a consultant company continue?

AC) It will continue until reception of the permission. Generally, in most cases, a schedule delays because an owner of the project does not provide the information on time.

Are there any items that must be inspected other than items written in QJ Sub decree on Environmental Impact Assessment or others?

For example, there is no description about dioxin.

AC) A consulting company can propose while referring standards in Thailand.

Basically, for regulated values, values written in Sub decree should be referred. For substrates without any references, regulated values based on examples in surrounding countries are referred and used.

QJ) For the initial determination of the Ministry of Environment, how long does it take?

AC) For a full version, you don't need to submit to the Ministry of Environment. Results determined by IEIA or EIA will be provided for about a week. Additionally, there is the EIA department in the Ministry of Environment and you will consult the department about this.



Procedures for IEIA/EIA

EIA: Environmental Impact Assessment IEIA: Initial Environmental Impact Assessment

Date and time	August 9, 2017 (Wednesday) 9:10 -
Venue	Carbon Education and Waste Management Organization (COMPED)
Participants from	Waste Management Project Group, Director Rithy Uch
Cambodia	
Kanagawa JCM	Kojima, senior managing director (Kojimagumi), Kobayashi, president
Team	(Cambodia branch, Kojimagumi), Mr. Toleng
	Higuchi, department manager (Chiyoda Kenko Co., Ltd.), Sasaki,
	deputy director (Mizuho Information & Research Institute, Inc.)

After explanation of the project, we took time for Q&A about technologies of the dry type methane fermentation. Especially for difference between the wet type and dry type, advantages and disadvantages, etc.

AC) If the plant capacity is 100 t/day, it may be operated with the collected amount from specific markets. We heard that about 30 other companies had discussions with Phnom Penh Capital, and we consider that the main issue is how to secure a place for the plant.

For waste gathering, while cooperating with CINTRI, the transportation company, we may select an option whether we create our own gathering team.

QJ) For gathering/transportation of wastes, we were told by the Capital that they will not accept companies other than CINTRI.

AC) After selecting candidate locations, we will consult Phnom Penh Capital sooner.

Additionally, it is important to have a dialogue with EDC. It is about a selling price of electric power and how to secure purchasers of electric power. EDC usually sets their purchase price at about 7 cent/kWh, therefore, we consider that there is a gap between their usual purchase price and your estimated price (10 cent/kWh).

From our experiences, it may be difficult to request CINTRI for sorting wastes. From the market, a large amount of wastes are generated. Composts have been produced since 2000, but it is necessary to sort when unnecessary wastes are mixed. If they can be sorted, they will lead to improvement for efficiency of compost production and quality of composts.

QJ) We would like to contact CITRI.

AC) We are acquainted with CINTRI and may support you.

In Phnom Penh Capital, the compost business was stopped in 2012. With the support from IGES, the compost business moved to Battambang. Currently, we have proposed the waste strategy plan of Phnom Penh Capital to IGES.

For waste gathering/transportation business, if we assume to do it on our own, we cannot obtain a tipping fee (0.75USD/t). When we bring wastes to a landfill area, we need to pay a treatment fee to Phnom Penh Capital (1.0USD/t).

Tipping fees that CINTRI obtain are as follows:

- Individual household waste: (1USD/month)
- Wastes from shops: (20 40USD/month)

• Metal: It can be disposed or may be sold to collection traders.

Date and time	August 9, 2017 (Wednesday) 2:00 PM -
Venue	Institute of Technology of Cambodia
Participants from	Dr.Kong Chhuon, Head of Research Unit for Water
Cambodia	and Environment
Kanagawa JCM	Kojima, senior managing director (Kojimagumi), Kobayashi, president
Team	(Cambodia branch, Kojimagumi), Mr. Toleng
	Higuchi, department manager (Chiyoda Kenko Co., Ltd.), Sasaki,
	deputy director (Mizuho Information & Research Institute, Inc.)

Explained about the project to be proposed.

We told followings about what we expect for ITC:

- To understand the methane fermentation technology.
- To analyze components of materials.
- Cooperation for education of engineers who will operate the plant in the future.

QC) Regarding a scale of electric power generation

AJ) Approximately 1 MW of electric power can be generated for 100t/day of general wastes. In Phnom Penh Capital, 2,000t/d of wastes are disposed, and if assuming 60% of those can be used as organic matters, 1,200t/d is the target amount of wastes. Based on this, a 12MW electric power generation facility can be introduced.

AC) For compositions of wastes, there is the published data on 2014. The data was created in accordance with the sorting method that was conducted by JICA in 2005. For target markets, the largest market in Phnom Penh Capital (a central market) was not included. To maintain the statistic superiority, the necessary number of samples was calculated and then the data samples were collected based on it.

Main results are shown below:

F-was (Food waste) was 57.4%

PL-white (transparent plastic bag) was 6.8%

Above are main wastes.

QJ) We would like to request that only Food wastes are taken out and their components are analyzed. As shown in documents, it is because the expected amount of methane gas emission varies depending on components of wastes and pH adjustment is also included in works. Is it possible to do the ignition loss analysis?

AC) Maybe, you mean the Ash Contain Analysis, and we can do it.

Further procedures will be conducted through Cambodia branch of Kojimagumi.

Date and time	August 9, 2017 (Wednesday) 4:00 PM -
Venue	Phnom Penh Capital, Department of Environment
Participants from	M.Engineer Khim Nora
Cambodia	
Kanagawa JCM	Kojima, senior managing director (Kojimagumi), Kobayashi, president
Team	(Cambodia branch, Kojimagumi), Mr. Toleng
	Higuchi, department manager (Chiyoda Kenko Co., Ltd.), Sasaki,
	deputy director (Mizuho Information & Research Institute, Inc.)

AC) (Answer for Q1-3.) Phnom Penh Capital has the right. Currently, Phnom Penh Capital have outsourced to CINTRI, a private vendor, about 100% of waste gathering in Phnom Penh Capital and transportation of those wastes to a waste treatment facility. For the contract style, Phnom Penh Capital have made contract directly with CINTRI.

At first, the contract period between these two parties is 50 years, but according to Article 32 of Ordinance 1135 issued in 2015, the contract period was limited within 10 years.

Application procedures

- ① Establish a company. No problem for 100% foreign capital. No regulation is found.
- ② Apply to the Ministry of Environment as a business operator.
- ③ After the application of ② is approved, determine the area where you want to do waste gathering, transportation, and a waste treatment business and consult or apply to the general affairs of each province in general.
- ④ Report to the department of waste management in each province The relevant department creates a report and report to the governor of the province.
- (5) Related departments will gather and evaluate.



Source) Based on the interview, Mizuho Information & Research Institute created. Application procedures as a business operator of waste treatment

QJ) We heard that obligations for waste gathering/treatment moved from the province to the District, but is it still OK to contact to the province for consultation?

AC) The District is not a local government, therefore, we need to report to the province in the end. Additionally, there may be a gap between actual situations and ordinances. The District says they can make a contract, however, considering whether the District can take responsibility or have enough knowledges or others, we recommend to consult the province.

AC) In the past, 30 companies applied to generate energy utilizing a landfill. Also, Phnom Penh Capital asked them for inspections, but there has been no case that any reports were submitted.

The most recent example was an application from a Chinese capital with a Cambodian capital for the business to generate electric power utilizing wastes. To realize it, the land of 7 - 12 ha is necessary as the total area.

However, the total area of the landfill that Phnom Penh Capital secures is 31 ha, and except for 2 ha, the remaining is used as the waste landfill.

Capacity of electric power generation is 50MW/2000t at first, and through 3 steps, it will finally be 150MW/6000t in the plan.

AJ) JICA predicted that 6000t/day of wastes might be generated in the future, but we consider that we should review whether the prediction is realistic or not.

Additionally, for our understanding, we would like to tell that, considering the current compositions and water contents of wastes, it can be evaluated that electric power generation is difficult.

QJ) Are there any proposals relating to methane gas collection?

AC) There was a proposal from South Korea to collect naturally-generated methane gas by inserting pipes in the Landfill Site. As a result of inspection about the amount of gas collection, it was concluded that the amount was almost none and the project did not proceed.

AC) Phnom Penh Capital does not value the technology.

The reasons that proposals from 30 companies did not go well are as follows:

- ① To secure the necessary area
- ② The purchase price for electric power generated by waste incineration is higher than the standard purchase price of EDC.
- ③ Request for a tipping fee (Phnom Penh Capital does not pay)

Additionally, there is a proposal from Phnom Penh Capital to citizens.

That is to sort wastes when disposing wastes. This also include an intention of the Capital to change the situation that only CINTRI shares a monopoly.

Places where wastes are gathered:

- ① Households
- ② Construction sites
- ③ Emission from factories
- ④ Restaurants, markets

QJ) Until when will it be introduced?

AC) We have no idea how long it may take.

Date and time	August 10, 2017 (Thursday) 10:30 -
Venue	JETRO office
Participants from	Senior investment adviser, Mr. Takatomo Ito
Cambodia	
Kanagawa JCM	Kojima, senior managing director (Kojimagumi), Kobayashi, president
Team	(Cambodia branch, Kojimagumi), Mr. Toleng
	Higuchi, department manager (Chiyoda Kenko Co., Ltd.), Sasaki,
	deputy director (Mizuho Information & Research Institute, Inc.)

Made a courtesy visit. After explanation of the project overview, we introduced actual contracted prices of EDC.

QJ) Relating to your business, would you introduce someone who leads to promotion or expansion of our project?

AC) The company named Murata Sangyo from Munakata City in Fukuoka came from Japan as a waste treatment business operator, and this is the 3rd year for their business in Cambodia. We may introduce the company to you.

AC) We heard that JICA send experts to the Ministry of Environment. It may be better to meet a deputy director who is in charge of the site of JICA.

We told that we would like to continuously exchange information and seek their guidance and closed the meeting.

Date and time	August 10, 2017 (Thursday) 11:30 -
Venue	JICA office
Participants from	Mr. Hiroto Yasuhara, Project Foundation Advisor
Cambodia	
Kanagawa JCM	Kojima, senior managing director (Kojimagumi), Kobayashi, president
Team	(Cambodia branch, Kojimagumi), Mr. Toleng
	Higuchi, department manager (Chiyoda Kenko Co., Ltd.), Sasaki,
	deputy director (Mizuho Information & Research Institute, Inc.)

Made a courtesy visit. Explained the project overview.

QC) Which country's technology to be introduced do you use?

AJ) We consider to use the dry type fermentation facility from QWS (Belgium).

AC) The other day, Prime Minister Hun Sen visited the waste treatment facility in Koto-ku, Tokyo.

AJ) Since working in Toda Corporation, I have accumulated findings and experiences about the waste treatment and the use of biomass.

QC) If applying QIP, who will be an actual investor?

AJ) We assume capital injections from Kojimagumi, Chiyoda Kenko, and a Cambodian company.

QC) I heard that you are having difficulties about the negotiation to sell electric power to EDC. I have an impression that 9 cent/kWh is difficult.

AJ) We heard that you recently agreed with EDC at 9.1 cent/kWh in the solar power project.

AC) From July, we have sent experts to the Ministry of Environment in Cambodia. We also have a purpose to clarify EIA procedures and support EPA (Environmental Performance Assess).

AJ) Including introduction, we would like to continuously seek your guidance.

Date and time	August 10, 2017 (Thursday) 14:00 -
Venue	Aeon
Participants from	National Assembly Rank of Minister, Mr. Kim San
Cambodia	
Kanagawa JCM	Kojima, senior managing director (Kojimagumi), Kobayashi, president
Team	(Cambodia branch, Kojimagumi), Mr. Toleng
	Higuchi, department manager (Chiyoda Kenko Co., Ltd.), Sasaki,
	deputy director (Mizuho Information & Research Institute, Inc.)

Explanation of the project overview. Regarding future cooperation in Konpong Speu.

AC) For applications of business relating to waste incineration/electric power generation, there were 2 cases in the past as long as we knew. One was a South Korean company and the other was a Thailand company. For conditions to operate a business, followings were requested:

• Price of electric power selling was high at 14 cent/kWh or more.

• Request for us to pay a tipping fee.

We cannot accept these conditions. On the other hand, in your proposal, you requested only 10 cent/kWh and do not request a tipping fee. I consider there is a possibility to accept this proposal.

AC) For an additional advice, you'd better to secure the candidate location for the project. It is to prepare for the case that the 2-ha land would not actually be provided.

QJ) If we secure a land, about how much does it cost?

AC) There may be a land with about 10,000USD/ha.

We asked continuous information exchange and cooperation and closed the meeting.

Date and time	August 11, 2017 (Friday) 15:00 -
Venue	Meeting room, Phnom Penh Capital
Participants from	Vice governor and others
Cambodia	
Kanagawa JCM	Kojima, senior managing director (Kojimagumi), Kobayashi, president
Team	(Cambodia branch, Kojimagumi), Mr. Toleng
	Higuchi, department manager (Chiyoda Kenko Co., Ltd.), Sasaki,
	deputy director (Mizuho Information & Research Institute, Inc.)

## ① Greetings.

The purpose of the project is to generate electric power using general wastes in Phnom Penh Capital. Introduction of participants from their side.

Three issues

1. Traffic jam, 2. Sewage water, and 3. General waste

It is necessary to solve three issues by discussing with each interested party.

Due to cooperation from JICA, traffic signals will be placed in 216 areas and completed in this November.

Sewage water facilities are under construction and Project 1 to 3 have been completed. Project 4 has not been completed yet. When completed, we expect that flood can be prevented in 4 districts. I spoke about Project 4 when I visited Japan. EIA has been completed. A bid is planned to be implemented in Japan.

For another issue, a treatment of general wastes is presented. The targets include sewage water, water supply, or contamination of rivers. At present, there are 2 landfills.

The 2nd landfill consists of 4 areas, but Area A, B, and C have been already full and in our forecast, all areas will be full until 2030.

Additionally, based on the JICA inspection, roads around the Capital are under construction. Plan 1 was completed. Plan 2 requires 2000 MUSD. For sewage water related business, after completion of roads, we will develop sewage water facilities. To conduct the sewage water treatment, it costs 0.9 USD per person (JICA's prediction).

Current situation of general wastes: One landfill, a lack of manpower in a waste gathering/transportation company and a lack of facilities.

A problem is people who dispose. In the current situation, organic and inorganic substances are mixed. People do not dispose on the specified transportation days. Wastes are left uncontrolled and disorganized.

The landfill is located around Phnom Penh Capital. The area of Phnom Penh Capital is expanding. The amount of wastes are gradually increasing. We have the situation that the waste gathering/transportation company does not properly implement their work.

Problem of the landfill: After disposed, wastes are left uncontrolled. Wastes are being burnt, but fire sparks are falling around, which becomes a big issue as there is a gas station or others around there.

A lack of technologies is one of issues. He visited Japan in 2015. In Japan, even children can sort wastes. In Cambodia, even adults cannot sort wastes. The rate of plastic use in Japan is relatively lower than that in Cambodia. In Cambodia, a plastic bag is used and the ratio in wastes is higher.

We would like to learn contents of your proposal and use it as a reference in Phnom Penh Capital.

After introduction of the team, explained the project overview.

## 2 Explanation of the project

Explained the project that Kojimagumi has been outsourced by the Ministry of Environment for implementation of FS.

Business that will be conducted by Phnom Penh Capital and Kanagawa prefecture. From now, a verification business is also planned.

I would like your cooperation as we need to sign a memorandum of understanding between Kanagawa prefecture and Phnom Penh Capital within the inspection period until next February. Explained about the project. Two movies.

(Vice governor: He took notes at necessary points and concentrated listening to us)

## ③ Q&A

Vice governor)

Advice: We had similar proposals from 30 companies. The selling price of electric power was higher. EDC usually sets at 7 cent/kWh.

At present, one company's selling price of electric power is 8 cent/kWh after negotiation with EDC.

Considering that the situation of Phnom Penh Capital is 2,000t/day currently and it may become 4,000t/day in the future, we consider that your project of 100t/day is smaller. If EDC approves or applies to CDC, and a SF fee relating to investment from the government can be obtained, Phnom Penh Capital will fully cooperate with you.

AJ) For the business, we consider that it is important to obtain the income that is worth a running cost. In this context, setting the selling price of electric power is agonizing.

From the aspect of risks, we consider that it is challenging to develop a large-scale plant from the beginning. After staring from a small-scale plant and having actual results, we will consider a large-scale plant. Then, we consider that the selling price of electric power can be also reduced.

Additionally, we would like to realize the small-scale plant as a showcase. We presume that previous proposals from 30 companies are based on incineration that is electric power generation with waste incineration. The ratio of raw waste in Japan is 35%, but in Phnom Penh Capital, nearly doubled amounts of raw waste are included and they contain water very much. If much water is contained, heat will be used for evaporation. Therefore, we presume that those wastes might not be burnt as they are. In methane fermentation, wastes are used by separating water, therefore, it can be calculated that collected energy is double or more of electric power generation with waste incineration.

Additionally, if burning residues after fermentation, it can also contribute to reduction of wastes. Residues can be also used as compost. Demands of compost is currently increasing. This is also a potential product.

In Japan, tanks are installed even in sewage water facilities to introduce methane fermentation and utilize energy.

Vice governor) For methane, two South Korean companies invested before, but they failed. They invested the methane collection business without enough inspections, but they failed because there was enough methane.

I visited a facility in Hiroshima. Anything was recycled to the end. Only hazardous wastes were disposed.

Your plan is to use methane fermentation, burn wastes that cannot be used, and landfill, but we also would like you to consider production of tiles or other utilizing incinerated ash.

In the JICA's verification business, incinerated ash is recycled. They plan the business to

produce tiles by mixing a curing agent and ash. In your business, we would like you to consider that residues are not just disposed and utilized for tiles or others.

AJ) We consider that we can adopt your proposal. Our proposed project uses the system that forcibly creates an enclosed space and take energy out, which is different from the method of South Korea.

Vice governor) I would like to thank you for the information you shared with us. Also, thank you for inviting two staff members in the Ministry of Environment to Japan.

After entering into a MoU with Kitakyushu City who is our sister city, Phnom Penh Capital will also proactively consider so that we can enter into a similar MoU with Kanagawa prefecture.

QJ) We would like to seek your permission here to enter markets and landfills for inspections.

Vice governor) I give you my permission. I will support and cooperate with your business.

## Attached documents

August, 2017 Solid Waste Management

## Questionnaire

- 1. Regarding the Municipal household waste, who has the right to select a private company to support their waste management?
- 2. Do you have any procedure to apply for the work to collect and to transport municipal household waste commissioned by the Municipal Government?
- 3. Do the Municipal household waste after delivered to the landfill site which some private company runs still belong to the property of Municipal Government?
- 4. How can we access those delivered Municipal household waste?

(Reference Information)

Solid Waste Management in Cambodia

Regional Workshop on Development of National and Strategy for Radioactive Waste Management 24-28 March 2014

IAEA, Vienna, Austria

Mr. DANH Serey, Deputy Director of EIA Department, Ministry of Environment, Cambodia.





Fig.2 Institutional Responsibility on Solid Waste Management

# Royal Government of Cambodia Council of Ministers No : 36 ANRK.BK **Sub-Decree on Solid Waste Management (1999)**

 $\Box$  The purpose of this sub-decree is to regulate the solid waste management with proper technical manner and safe way in order to ensure the protection of human health and the conservation of bio-diversity (Article 1).

 $\Box$  This sub-decree applies to all activities related to disposal, storage, collection, transport, recycling, dumping of garbage and hazardous waste (Article 2).

 $\Box$  The collection, transport, storage, recycling, <u>minimizing</u> and dumping of waste in the provinces and cities are the responsibility of the authorities of provinces and city (Article 4).

Minutes of the 2nd inspection consultation

# Notes of Cambodia on-site inspection (Period: December 19 to 21, 2017)

- AC) Answers from Cambodia
- QC) Queries from Cambodia
- AJ) Answers from Japan
- QJ) Queries from Japan

Date and time	December 19, 2017 (Tuesday) 08:30 - 09:45
Venue	Cambodia office, Kojimagumi
Participants	Cambodian Education and Waste management
from	Organization (COMPED)
Cambodia	Director Mr. Rithy Uch, Vice Director Mr. Sam Phalla
Kanagawa	Kojima, senior managing director (Kojimagumi),
JCM Team	Kobayashi, president (Cambodia branch, Kojimagumi), Mr.
	Toleng
	Higuchi, department manager (Chiyoda Kenko Co., Ltd.),
	Irumano, chief consultant (Mizuho Information & Research
	Institute, Inc.)

1. Explanation about the progress of the business and requests: Requests are as follows:

(i) Request to introduce us to CINTRI We would like to procure 30t of wastes from the market and 20t of those from CINTRI.

(ii) Cooperation about production and sales of compost: As several dozen ton/day of residue generation is expected, we would like to utilize them as compost.

2. Q&A

QC) Where is the location of the plant?

AJ) We are still considering the land for the plant. We need a comprehensive judgment including where we procure wastes, where we sell energy, etc. AC) Cooperation from CINTPL varies depending on the location

AC) Cooperation from CINTRI varies depending on the location.

AJ) Whatever the case, we would like to make a small-scale model plant at first through this project. For the next step, we will introduce a large-scale facility in Phnom Penh Capital, and then proceed the horizontal development all over the country. The Ministry of Environment proposed construction of plants separately in each district.

QC) If you produce compost, where do you assume?

AJ) It depends on local needs and the plant site. The area where compost can be accepted is preferable. Because heat is generated as energy, it is efficient that a compost factory is constructed in a premise of the plant. For the area of the plant site, approximately  $5,000 \text{ m}^2$  is necessary.

QC) Do you purchase or lease the plant site?

AJ) We consider both, depending on the plant site.

AC) You should purchase the land, not lease it.

QC) What are contents of residues?

AJ) We assume that there are 50t of residues in total, and of those, we consider 30t of food residue from the market and 20t of papers from CINTRI.

QC) How do you handle about mixing heavy metal or plastic?

AJ) We treat plastics by sifting. We consider that heavy metal is not mixed in wastes from the market, but whatever the case, we will collect about 50kg of wastes from the market and conduct a detailed analysis about contents of them at the head office of OWS in Belgium.

AC) When we worked with CINTRI, wastes were not sorted.

QC) Do you load wastes to the plant every day? Do you load them immediately after completion of the plant construction?

AJ) First, wastes need 2 to 3 weeks for fermentation after the initial loading. After that, the plant can treat 50t every day. For about 2 months, gas will not be generated.

Explained differences of the process for compost production between OWS and Anaergia Inc.: For the dry type of OWS, compost is remained as solid. No stirring. Heat is necessary.

- Anaergia: Liquid fertilizer is produced.→Water treatment is necessary.
- OWS: Composting $\rightarrow$ Low cost

QJ) How is the demand for compost? Excluding the price, is there reception capacity (farm houses, etc.) for several dozen ton/day of composts?

AC) There are demands, but it is difficult to utilize compost around Aeon.

AJ) Around Aeon, it would be better to introduce a machine that can supply cold temperature from gas. Depending on areas, required technologies or requirements varies, therefore, we consider while comparing candidate areas. There are various considerations including objections from residents, procurement of raw materials, cooperation from CINTRI, presence/absence of heavy metal, etc.

QJ) This business is to make a model case in order to grow the business larger in the future. Is it possible for you to consider the business together as a partner, in addition to just cooperating with us about production and sales of compost? In Cambodia, the amount of raw wastes are larger and energy is necessary for incineration. It is a reasonable choice for Cambodia to make energy from raw wastes using methane fermentation and incinerate residues.

AC: Possible. We would like you to share the information with the local side sufficiently. We will also introduce you to CINTRI.

QC) Does CINTRI pay a tipping fee? Currently, 0.75USD/t is paid for the final treatment facility.

AJ) A tipping fee is not necessary.

3. Others

AC) Explanation about a plant made by Germany: 1mw class with 8 units. With 400t of capacity, 200t of wastes are loaded every 28 days.

AC) The price of compost is 2 euros/ton. We would like you to keep in mind differences of the price between advanced countries and Cambodia.



End of the minute

Date and	December 19, 2017 (Tuesday) 16:00 - 17:30
time	
Venue	Phnom Penh capital Administration
Participants	Chief of Waste Management Office, Mr. Chum Bunnarin
from	
Cambodia	
Kanagawa	Kojima, senior managing director (Kojimagumi)
JCM Team	Kobayashi, president (Cambodia branch, Kojimagumi),
	Mr. Toleng, Mr. Savet
	Higuchi, department manager (Chiyoda Kenko Co., Ltd.),
	Irumano, chief consultant (Mizuho Information &
	Research Institute, Inc.)

Explanation about the progress of the business:

 AC) We would like you to tell use if the candidate location is determined. The land price is higher around NPIC.
 AJ) There are 2 major elements for selection of the candidate location. Waste gathering (cost, method) and areas where energy is used.

2. Q&A QC) How do you sell heat? AJ) The use of heat is as follows:

- ① To utilize it for air conditioners using absorption type water cooler/heater (e.g. Aeon)
- ② Sales to factories. (e.g. Coca-cola company in SEZ is assumed)

Depending on the plant site, intended use cannot be found. If EDC can purchase electric power only with the lower price, we consider to separate methane and CO2 and utilize each of them separately. For CO2, we expect the growing demands of dry ice and gas for welding.

QC) We concern about rising land prices in Phnom Penh Capital. Could you consider the existing final treatment facility as a candidate location?

AJ) We can consider it. We would like to operate as the model business that changes wastes to energy.

AC) We would like you to prepare a report including requests for expected cooperation from Phnom Penh Capital and report them to the governor of Phnom Penh Capital. Kitakyushu City is planning (conducting?) the pilot business to produce compost at one of districts in Phnom Penh Capital.

AJ) Our purpose is not to produce compost. If we try to use a method in Japan as it is, it takes much costs and feasibility may be lower. We would like to find the method that matches the actual situations in Phnom Penh Capital. For example, in Europe, pellets are produced by crushing general wastes.

We would like to proceed the project as business, therefore, we would like you to share the information about necessary procedures to promote the business.

AC) We can cooperate more for a small-scale plant. Also, we would like you to speak to the Ministry of Environment.

QJ) We expect 30t of wastes from the market and the remaining of 20t from CINTRI, but if we cannot obtain cooperation from CINTRI, we would like you to cooperate with us. As we plan to hold a seminar for related parties in Phnom Penh in the beginning of February, we would like you to join and cooperate about the seminar.

AC) All right.

AC) NPO (NXEUP?) entered into a MoU with Phnom Penh Capital and meetings are being held for preparation of the waste master plan (waste strategy plan). For contents of the plant, we would like you to ask to the governor of the Capital.

AJ) The government of Japan does not accept the business plan that is not consistent with strategies, therefore, we would like you to provide information as much as possible.

AC) There is nothing to be determined specifically, and it is in a phase of information collection. They are considering how to reduce wastes.

AJ) Each project has its own strength, for example, our project is methane fermentation from residues, Kitakyushu is the compost business, China is total incineration, or others. Whatever the case, we would like to recommend preparation of the master plan with more flexibility.

End of the minute

Date and time	December 20, 2017 (Wednesday) 10:00 - 11:00
Venue	Electricity Authority of Cambodia (EAC)
Participants	Vice chairman, Mr. Yim Viseth, and other 3 participants
from	
Cambodia	
Kanagawa	Kojima, senior managing director (Kojimagumi)
JCM Team	Kobayashi, president (Cambodia branch, Kojimagumi), Mr.
	Toleng, Mr. Savet
	Higuchi, department manager (Chiyoda Kenko Co., Ltd.),
	Irumano, chief consultant (Mizuho Information & Research
	Institute, Inc.)

- 1. Explanation of the project overview
- 2. Q&A

QJ) We would like to ask about detailed process relating to obtaining a license, related organizations that should be consulted in advance, and relevant departments/divisions in EAC.

AČ)

- Organizations related to the electric power generation business: Ministry of Energy (designing policies relating to energy), EAC (permission, price setting, problem solving), electric companies (there are about 300 companies all over the country, EDC is the largest)
- Process to start the electric power business
  (i) Permission from the Ministry of Energy
  (ii) Agreement with sales contact (EDC) regarding the Power Purchase Agreement (PPA)
  (iii) Application of a license to EAC (project overview, license taxation, contents of PPA with sales contact)
- The relevant department of EAC is the Department of Generation and Transmission
- Currently, sales to companies other than EDC is not accepted. In-house power generation is possible.

QJ) For prohibition of sales to companies other than EDC, is it specified by the law?

AC) There is such rule.

AC) Decision making of EDC for purchasing is based on consistency with the business plan of EDC and determination by the Ministry of Energy who is a supervisory authority.

QC) How much amount of electric power generation do you assume? AJ) We assume the same amount of heat energy (CHP) as 500kWh of electric power generation. Residues are used as compost.

AC) It is difficult to include a large-scale project in the plan of EDC. A smallscale project may be accepted more. When actually considering the business, we will have interviews with the Ministry of Energy, EAC, and EDC.

We permitted the electric power generation business of 3M-scale CHP in 2011, however, it didn't go well as the business.

AJ) We heard about failure of the project from the Ministry of Environment.

QC) Do you collect wastes on your own?

AJ) We are considering transportation from the market on our own.

QC) How do you assume the selling price of electric power? AJ) In the initial planning, we calculated 10 cent. In recent examples, we heard about 7.5 cent, but we will consult EDC. We will also consult the Ministry of Environment and would like them to consider the value as a green electric power.

AC) Before signing with EDC, we would like you to share the information with EAC.

QJ) Do you also have any relations about sales of heat? AC) EAC is related only with electric power. Please ask about it to the Ministry of Energy.

AJ) We appreciate valuable information you provided.



End of the minute

Date and time	December 20, 2017 (Wednesday) 12:00 - 12:30
Venue	Dankor Market
Participants	Head of the market and other 1 participant
from	
Cambodia	
Kanagawa	Kojima, senior managing director (Kojimagumi)
JCM Team	Kobayashi, president (Cambodia branch, Kojimagumi), Mr.
	Toleng, Mr. Savet
	Higuchi, department manager (Chiyoda Kenko Co., Ltd.),
	Irumano, chief consultant (Mizuho Information & Research
	Institute, Inc.)

1. Explanation of the project overview

AC) The amount of wastes varies from 30 - 40t to 40 - 50t in the dry season and the rainy season. We believe that most of contents are vegetables.

JA) It is positive for this project that contents of wastes are consistent. In the future, we will use 2,000t of wastes in the entire Phnom Penh Capital, but at first, we would like to make a model case utilizing wastes from Dankor.

# 2. Q&A

QJ) We would like to seek your permission and support for collection of waste samples.

AC) We accept. When would you like to do?

AJ) Anytime is OK. Possibly, we would like to do it during this on-site inspection period (until December 23).

AC) From 3 months ago, CINTRI has collected wastes. Wastes in the market are being collected for 24 hours, but CINTRI comes here for waste gathering around 20:00 - 21:00. The number of cleaning staffs in the market is 12 staffs for a cleaning work and 12 staffs for a waste gathering work.

QJ) With how many trucks does CINTRI come here?

AC) They come here with 1 or 2 trucks.

 $\ensuremath{\mathrm{QJ}}\xspace$  ) The used amount of electric power and water in the market.

AC) We don't have the data as the other company operates.

End of the minute

Date and time	December 20, 2017 (Wednesday) 16:30 - 17:30
Venue	Electricite Du Cambodge (EDC)
Participants	Corporate Planning and Projects department Deputy
from	Director, Mr. Rann Seihakkiry,
Cambodia	Private Project Management Office, Deputy Chief of Section
	of International Power Purchase Agreements ms. Chea
	Danei
Kanagawa	Kojima, senior managing director (Kojimagumi)
JCM Team	Kobayashi, president (Cambodia branch, Kojimagumi), Mr.
	Toleng, Mr. Savet
	Higuchi, department manager (Chiyoda Kenko Co., Ltd.),
	Irumano, chief consultant (Mizuho Information & Research
	Institute, Inc.)

- Explanation of the project overview AC) We approved the waste business for Eco-ken corporation (?). The plant is 5MW or less and uses gas from the landfill. We agreed about the purchase price with 9 cent. We heard that they have not gone well due to a lack of wastes.
- 2. Q&A

AC) We believe that, in the future, Phnom Penh Capital will increase smallscale plants. There are plans for 30 to 50MW scale of incineration facilities by Chinese or Thailand companies.

JA) We heard about them from Phnom Penh Capital.

AC) We would like to consider the purchase price at 10 cent or less. As we have a lot of waste-related proposal recently, we are planning a bid. There is a committee to control a bid. Major members of the committee include EAC, EDC, the Ministry of Economy, the Ministry of Energy, and Phnom Penh Capital. Additionally, the Ministry of Environment and others will be added. If you operate the project with Phnom Penh Capital, the Ministry of Environment will be involved only in EIA.

QC) Various matters are mixed in wastes. How do you take out materials for methane fermentation?

AJ) Before loading wastes into the plant for fermentation, there is a sorting process.

QC) What is your image of the purchase price?

AJ) Our initial estimation was 10 cent. But it was just a price of our initial estimation in the plan. We also heard that the land price in Phnom Penh Capital is rising.

QC) Do you have any subsidies from the government of Japan?

AJ) We will have their subsidy for the initial investment of the plant construction.

QC) Is it possible to reduce the purchase price below 10 cent? We believe that 10 cent is difficult for a bid.

AJ) We conducted sufficient inspections in advance and determined that 10

cent was reasonable from the standpoint of business continuity. We would like you to consider the purchase price taking into account a green power.

QA) We, EDC, would like you to consider 8 cent. EDC is not an organization intending to improvement of the environment. For EDC, price setting is a business. When could you determine the price?

AJ) For 8 cent, we need more subsidies including JICA. If we use a subsidy of JICA, including price setting, the business commencement is from 2019.

QC) Where is the candidate location for the plant construction?

AJ) We are still considering it.

CA) As a treatment cost is incurred in a final treatment facility, if there is no tipping fee, CINTRI may cooperate with you. We recommend the areas near the power distribution grid of EDC



End of the minute

Date and time	December 22, 2017 (Thursday) 9:00 - 10:00
Venue	CAMATEC Engineering & Construction .,LTD
Participants	Corporate Planning and Projects department Deputy
from	Director, Mr. Rann Seihakkiry,
Cambodia	Private Project Management Office, Deputy Chief of Section
	of International Power Purchase Agreements ms. Chea
	Danei
Kanagawa	Kobayashi, president (Cambodia branch, Kojimagumi), Mr.
JCM Team	Toleng, Mr. Savet
	Higuchi, department manager (Chiyoda Kenko Co., Ltd.),
	Irumano, chief consultant (Mizuho Information & Research
	Institute, Inc.)

- 1. Explanation of the project overview
  - After we checked actual results of an ethanol factory on the web, we visit here.
  - The equipment to be used this time is made by OWS in Belgium. We believe that it is the most proven technology in the world at present. The incineration technology in Japan is high, but methane fermentation is advanced more in Europe.
  - In Phnom Penh Capital, 2,000t/day of wastes are landfilled. Through this JCM scheme, we will construct the intermediate treatment plant and aim to the appropriate final treatment in the future. In order to do so, first, we aim to construct a small-scale plant with 50t/day as a model case.
  - If utilizing agricultural residues, we can generate energy that can correspond a lack of electric power.
- 2. Company profile of Camatec

The company that obtained ISO relating to civil engineering for the first time in Cambodia. There are many actual results of plant construction and sewage treatment including an order from Coca-cola company.

3. Q&A

QC) Do you import fermentation tanks or procure them locally?

AJ) We will import them from Europe. They will be assembled in Cambodia.

AC) Reinforcing steels and concrete can be locally procured. We also produced tanks with a Malaysian company. Tanks for sewage treatment in a beer company with  $5,000 \text{ m}^3$ .

AJ) We consider that there is no problem for the plant construction. The largest material is a tank that has a size of  $3,000 \text{ m}^3$  (5m × 15m height) for the 50t scale. For the flow of the plant construction, foundation construction, assembly of the plant, and welding. Skills for welding are also necessary. A supervisor will be sent from OWS and he/she will provide technical guidance until commissioning.

Major materials are as follows:

- Gas holder⇒import
- Large pump⇒import
- Boiler=local procurement

• Stainless pipe=local procurement

AJ) In the phase to generalize this system, we would like to use local materials as much as possible. We would like to have a company who can work together including this point of view as our partner. Additionally, we also would like advices to where we should sell heat (CHP) emitted from the plant.

The most important point is calculation of costs. We would like a local partner to share the cost overview of the foundation construction with us. If you are interested in this project, we will bring the detailed data next time.

QC) Do you have the current location and drawings?

AJ) There are 3 candidate sites. We have not discussed with land owners, but whatever the case, we need to consider comprehensively about the distance from the place where wastes are generated, connection to EDC, presence/absence of companies/persons who we supply heat, the land price trend, etc. Phnom Penh Capital and EDC told us to consider in the Dangkao treatment facility, but we feel insecure about the foundation of the ground very much. For the area of the plant construction, approximately 5,000 m<sup>2</sup> is assumed. Hopefully, we construct a compost facility next to the plant.

QJ) If you have any idea about candidate sites, we would like to know.

AC) The price for the land of the treatment facility is lower. We can calculate if we know the area of the building part. The cost of the foundation construction considerably varies depending on the ground.

AJ) We will send the list of necessary materials, so we would like cost calculation of local procurement.

AJ) Including cost calculation, we can provide the information.

QJ) In order to connect to power distribution grid of EDC, could we contact to a vendor of substation facilities?

AC) We have a business with Konminkumai Corporation (?) and we can introduce you.

End of the minute

Date and time	December 22, 2017 (Thursday) 15:00 - 16:00
Venue	CINTRI
Participants	CINTRI: 4 participants
from	COMPED: 1 participant
Cambodia	
Kanagawa	Kojima, senior managing director (Kojimagumi)
JCM Team	Kobayashi, president (Cambodia branch, Kojimagumi), Mr.
	Toleng, Mr. Savet
	Higuchi, department manager (Chiyoda Kenko Co., Ltd.),
	Irumano, chief consultant (Mizuho Information & Research
	Institute, Inc.)

1. Explanation of the project overview

2. Q&A

QC) Do you sort wastes using a machine?

AJ) We sort wastes in 2 steps. In the first process, people sort wastes and in the next step, a machine sorts them. This is a small scale as this is for making a model case, but the main operation will be done by machines if it is a larger scale.

AJ) Explanation about situations of waste treatment in other countries.

- In Cambodia, it will be a same level as advanced countries including sewage water treatment. Japan uses total incineration, reduces the amount of wastes to one tenth and buries them in the treatment area. In the United States and European countries which have enough lands, there is a system to take out gas by inserting pipes into landfills. This method takes time, therefore, the system of OWS that is introduced this time has been developed.
- For the method in Japan, in order to treat wastes containing much water, fuels are necessary to maintain temperature and much loading is also applied to the plant.
- In the United States and Europe or China, papers, cloths, or plastics are changed to pellets.

QJ) Could we have the data about waste gathering? It is needed for the waste analysis. We will cooperate for composting with COMPED.

QJ) How much is a tipping fee for waste gathering?

AJ) It is not necessary. We have an image for CINTRI as a partner for an entrance and COMPED is a partner for an exit. If the distance of waste transportation is longer, we also consider to compensate the transportation cost for it.

QC) Who does sort wastes?

AJ) We can also consider to order the sorting work from us to CINTRI. It would be better to share works among related members.

QC) If the plant starts its operation, is there any other advantage for CINTRI? AJ) This business is intended just to make a model case. When we aim a larger-scale plant and generalization in the next step, we consider that there may be a business opportunity for the intermediate treatment business.

QC) How large is the area of the site? CINTRI has some ideas for the plant site. AJ) We would like to have at least  $5,000 \text{ m}^2$ . We can also lease the land. For the location, the standpoints for connection to EDC and supplying areas of energy are also important, in addition to carry-in of wastes.

QJ) We would like to collect about 50kg of wastes for the analysis. Would you cooperate about that?

AC) What is the purpose for the analysis?

AJ) We plan to inspect contents of wastes at the head office in Belgium. Estimation for the amount of gas generation or others.

QC) Considering objectivity, isn't it preferable with approximately 200kg?

AJ) We can send only a few kilograms to Belgium. There will be no problem as we have a method used in Japan to collect wastes as less-biased as possible.

AC) Sample collection would be better around 5:00 in the morning or 10:00 at night.

AC) We will report about the today's meeting to the senior management.



End of the minute

Minutes of the 3rd inspection consultation

## Minutes of meeting JCM inspection 2/5/2018 to 2/10/2018

Date and time	2/5/2018 9:00 - 11:30
Venue	Kojimagumi (Cambodia) Co., Ltd.
Participants from	COMPED, Mr. Phalla.
Cambodia	
Kanagawa JCM	Kobayashi, president (Cambodia branch, Kojimagumi), Mr. Toleng
Team	Higuchi, department manager (Chiyoda Kenko Co., Ltd.)

## Contents:

From the inspection team:

- Based on the previous meeting, we explained about the analysis data of waste samples in the Duem Kor market.
  - The gas amount in water $\Rightarrow$ ability to generate electric poser
  - According to the data, 50t/day, and the ability to generate electric power is 500Kw or less.
  - Therefore, we need to procure materials about the market+food residues+papers = 50t/day.
    - Market = OO tons
    - Food residue = OO tons
    - Papers = OO tons
- How to procure materials
  - For collection of food residues, as there is no food factory in Phnom Penh
    - Capital, places where we may collect food residues are restaurants, hotels, etc.
      However, from same places, food residues are collected for feeding in pigpens.
      - For this, Mr. Phalla said "please consult CINTRI."
      - As CINTRI determines the rough range of collection and client service fees, they may have the data of restaurants, hotels, and offices.
      - Based on this data, the truck number for collection can be found out. Then, collecting waste samples from trucks, we will analyze components and the amount of gas.
  - o Papers
    - They are only from offices, so it is difficult. For the mean time, it would be better to target papers generated from restaurants or hotels.
    - It was said that samples would be better to be collected from trucks that collect wastes in the areas with many offices. For areas and the truck number, we will consult CINTRI.



Date and time	2018年2月5日(月)13:00-14:30
Venue	Duem Kor Market
Participants from	Head of the market
Cambodia	
Kanagawa JCM	Kobayashi, president (Cambodia branch, Kojimagumi), Mr. Toleng
Team	Higuchi, department manager (Chiyoda Kenko Co., Ltd.)

- Expressing appreciation for sample collection
- Explanation about the progress of inspections.

Date and time	2/5/2018 16:00 - 17:00
Venue	JETRO office
Participants from	Mr. Ito, adviser of JETRO Cambodia
Cambodia	
Kanagawa JCM	Kobayashi, president (Cambodia branch, Kojimagumi), Mr. Toleng
Team	Higuchi, department manager (Chiyoda Kenko Co., Ltd.)
Contents of the	➢ Introduction of factories that will use electric power/heat from the
meeting	plant.
	Explanation/introduction of the cooler system business.

Contents:

- Explanation about the plant and the business.
  - For inspections of the project, we will collect biogas (60% of methane and approximately 40% of CO2) from raw wastes and generate electric power by CHP using biogas. From CHP, electric power and heat can be collected.
  - $\circ~$  We will sell electric power to EDC. The proposed price from EDC is 8 cent/kWh
  - $\circ~$  Heat will be sold to the factory that is using heat from dried fruits/bricks, etc.
  - If business profitability is not met with 8 cent, the selling price of electric power to EDC, it is possible that gas will not be used for electric power generation and instead, used for the air conditioning facility called the absorption type water cooling/heating system in office buildings/shopping malls. Gas will be used instead of electric power. It is possible to reduce the electricity charge.
  - Additionally, the other possibility is to separate the above-mentioned biogas into methane and CO2 and sell them as gas. Currently, CO2 is not produced in the country. Those for welding/industrial use are imported from neighbor countries.

➢ From Mr. Ito,

- Even when I see explanations/documents about the above-mentioned business, I cannot image that business.
- I would like to have briefing documents about the business.
- Recently, a Japanese company who wants to invest a dried vegetable factory came to Mr. Ito for consultation.
- Is it possible to use heat from the plant (CHP) for a bath business?
- > Mr. Higuchi will create and send documents requested from Mr. Ito.

Date and time	2/6/2018 8:00 - 12:00
Venue	Kojimagumi (Cambodia) Co.,Ltd
Participants from	
Cambodia	
Kanagawa JCM	Kobayashi, president (Cambodia branch, Kojimagumi), Mr. Toleng
Team	Higuchi, department manager (Chiyoda Kenko Co., Ltd.)
Contents of the	Meeting in the inspection team
meeting	

Date and time	2/6/2018 14:00 - 15:00
Venue	CAMATEC CO., LTD.
Participants from	Mr. Nila,
Cambodia	
Kanagawa JCM	Kobayashi, president (Cambodia branch, Kojimagumi), Mr. Toleng
Team	Higuchi, department manager (Chiyoda Kenko Co., Ltd.)
Contents of the	> Request for quotations about civil engineering/construction of the
meeting	plant
	> Request for quotations about assembly of the methane fermentation
	system

Contents:

- Based on the previous meeting, we will provide additional explanation. We provided the building drawing/areas for the planned plant. Also, we determined to exchange the necessary additional information via email later.
- The plant site is near the current landfill and also near the Cambodia Beer factory. As the Cambodia Beer factory was constructed by CAMATEC, based on the similar geological data, the quotation will be created.
- > The data that provided to CAMATEC in the meeting are as follows:
  - Building drawing + sizes of the plant
  - Cost information about mat foundation
- Additional information/requested matters
  - CAD version drawings of the plant
  - Information to calculate thickness/strength of mat foundation (weights of machines, areas where heavy machines are driven)
  - Details about the office



Date and time	2/7/2018 8:00 - 12:00
Venue	CAMBODIANA HOTEL
Contents	JCM SEMINAR
Kanagawa JCM	Kobayashi, president (Cambodia branch, Kojimagumi), Mr. Toleng,
Team	Kojima, senior managing director (Kojimagumi), Tsuchiya
	Higuchi, department manager (Chiyoda Kenko Co., Ltd.)
Contents of the	$\checkmark$
meeting	

Opinions from participants ➤ Professor Yim Mongteung, Department of Environmental Sciences in Royal University of Phnom Penh





Date and time	2/7/2018 13:00 - 14:00
Venue	CAMBODIANA HOTEL
Participants from	CINTRI-Operation Manager, Mr. Vuthy, 012-898-422
Cambodia	COMPED, Mr. Sam Phalla
Kanagawa JCM	Kobayashi, president (Cambodia branch, Kojimagumi), Mr. Toleng
Team	Higuchi, department manager (Chiyoda Kenko Co., Ltd.)
Contents of the	Confirmation of the data from CITRI
meeting	<ul><li>Consultation how we can collect food residue and papers</li></ul>

> Based on contents of the meeting with CINTRI, we explain about the plant.

- According to the inspection data from OWS, only from the Duem Kor market, the amount of methane is not enough for materials. Therefore, if we adjust materials using food residues and papers, the amount of methane increases.
- We consulted CINTRI about how to collect 10t/day of food residues and 10t/day of papers.
- To collect the above-mentioned wastes, it is considered sufficient to collect from the following 2 places.
  - AEON Mall: 8t/day are collected with 1 truck every day. More food residues are contained.
  - Naga World: Entertainment Center in Phnom Penh Capital, including hotel, restaurants, KTV, etc. Wastes are collected with a 10t truck every day. Many of wastes are vegetables, wood chips, food residues or others from kitchens.
  - Diamond Island area: the area including wedding halls/restaurants. Wastes are collected with a 15t truck for 2-3 times every day.
  - In above-mentioned 3 places, many of food residues are included in waste components, so some collect wastes as feed, but many of remaining are residues.
- Data for other areas

- Preak Lieb, National route 6: There are many restaurants. Wastes are collected with a 10t truck every day.
- Bueng Kok area: Wastes are collected with a 10t truck.
- > In the previous meeting, it was said that there are 2 areas of CINTRI. As follows:
  - o Kork Roka, Khan Prek Phnov, Phnom Penh
    - Kandal Steung District, Kandal Province



Date and time	2/7/2018 14:30 - 15:30
Venue	MH Ethanol Factory
Participants from	GM Mr. Son Gook Hee
Cambodia	
Kanagawa JCM	Kobayashi, president (Cambodia branch, Kojimagumi), Mr. Toleng,
Team	Tsuchiya
	Higuchi, department manager (Chiyoda Kenko Co., Ltd.)
Contents of the	Residues generated from factories
meeting	> Other meetings

Explain about the methane plant.

- Explanation of the purpose for visit. Residues that generate MH can be materials for the proposed plant, but we would like to confirm the treatment that has been operated.
- Explanation/information about the MH factory and the company
  - The MH factory was built in 2006 and has started its operation from 2008.
    - For procurement of materials, after making the contract with the Ministry of Agriculture, Forestry and Fisheries, the 7,000ha land has been leased. In that land, following are planted.
      - Sugar Cane = 1200 Ha
      - Mango = 700 Ha
      - Eucalyptus =
      - Banana = 2 Ha
      - King Grass =
    - We used to sell residues generated from the factory to Cambodian individuals, but now we don't sell them.
    - o Currently, almost 100% of residues are transported to the MH plantation in

Kompong Spue and used as materials for composts in the plantation.

- Produced composts are just managed/inspected by NPK.
- For management of geological conditions/composts in the plantation, 4 technicians are dispatched from South Korea.
- The MH plantation uses both composts produced internally and imported from neighbor countries.
- Produced ethanol is used in eating and drinking areas and exported to South Korea. The amount of export in the last year was approximately 30,000 (ton?).



Date and time	2/7/2018 17:30 - 18:00
Venue	HD Corporation
Participants from	Seang Chanheng, president of HD
Cambodia	
Kanagawa JCM	Kobayashi, president (Cambodia branch, Kojimagumi), Mr. Toleng,
Team	Kojima, senior managing director (Kojimagumi), Tsuchiya
	Higuchi, department manager (Chiyoda Kenko Co., Ltd.)
Contents of the	> Confirmation about a dried mango factory that is planned by HD
meeting	Corporation
> The alemand feator	

> The planned factory was cancelled.

Date and time	2/8/2018 9:00 - 9:20
Venue	KOBELCO ECO SOLUSION CO.,LTD
Participants from	Mr. Lor Bupha
Cambodia	
Kanagawa JCM	Kobayashi, president (Cambodia branch, Kojimagumi), Mr. Toleng
Team	Higuchi, department manager (Chiyoda Kenko Co., Ltd.)
Contents of the	$\triangleright$
meeting	

A Japanese head of the office was out for a business trip to Siem Reap for 2 days from the meeting day.

We asked Mr. Lor Bupha, a staff of HD, to give our business cards to the head of the office. The head of the office contacted to Kobayashi on February 9 (Friday).

Date and time	2/8/2018 9:30 - 10:00
Venue	SNK (Asia Pacific) PTE., Ltd Cambodia Branch, Shin Nippon Air
	Technologies, Co., LTD
Participants from	Mr. Mikio Shiroki, head of the office
Cambodia	
Kanagawa JCM	Kobayashi, president (Cambodia branch, Kojimagumi), Mr. Toleng
Team	Higuchi, department manager (Chiyoda Kenko Co., Ltd.)

Explained about the plant.

• Collecting methane gas from raw waste, and electric power is generated using the methane gas.

Date and time	2/8/2018 10:30 - 11:15
Venue	Kojimagumi Cambodia office
Participants from	Branch of Panasonic Asia Pacific Pte., Ltd
Cambodia	Mr. Maresuke Nagatoshi, head of the office
	Mr. Yong Leangheng, sales manager
	Kobayashi, president (Cambodia branch, Kojimagumi), Mr. Toleng
	Higuchi, department manager (Chiyoda Kenko Co., Ltd.)
Contents of the	Information collection/greetings
meeting	

➢ Explained about the plant.

- Collecting methane gas from raw waste, and electric power is generated using the methane gas.
- Or, methane gas is used for energy of absorption type water warmers in shopping malls, etc.
- We asked Panasonic if they introduce the above system in Cambodia.
- From Panasonic,
  - Currently, Chinese companies suddenly increase in Cambodia. Many of buildings are Chinese projects.
    - Depending of project grades, there will be good demands for facilities (made by Japan). Panasonic considered that they should cooperate/operate with Chinese companies to run their business in Cambodia.
  - Air conditioning system that Panasonic Cambodia imports/sells is only the electric system. There is no demand for a gas type yet.

Date and time	2/8/2018 14:00 - 15:00
Venue	General Department of Energy
Participants from	Victor Jona, head of the department
Cambodia	other 1 participant
	Kobayashi, president (Cambodia branch, Kojimagumi), Mr. Toleng
	Higuchi, department manager (Chiyoda Kenko Co., Ltd.)
Contents of the	<ul> <li>Selling price of electric power</li> </ul>
meeting	<ul><li>Licenses for the business</li></ul>

Explain/confirmation about the plant.

- Methane is produced from raw wastes⇒Using methane, electric power/hear is generated from CHP.
- We understand that we need license for generation/selling of electric power, but EDC purchases our electric power only with 8 cent though this project produces

Clean Energy.

As the Ministry of Energy, they checked whether there is any support for this business.

- $\circ$  We asked if we need any licenses for selling of heat, etc. No special license is needed.
- From General Department of Energy:
  - For the business of generation/selling of electric power, please take the following steps.
    - Inspection of business profitability: necessary for permission from MME A letter with the business overview is submitted to the Minister of MME.
    - Implementation of inspections
    - Created a report, submit it to and negotiate with MME.
    - Business profitability is accepted ⇒ commencement of the corporation, license, and business
  - There were proposals to start the electric power generation business using wastes from about 30 companies, but as a result, they could not start their business. Proposed as follows:
    - Of those, MME provided permission to 4 Chinese companies about investigations for their projects, and they undertook investigations and reported to MME.
    - The proposed technology was to generate 50 100MW of electric power by waste incineration.
    - The selling price was proposed to both ECD and MME with10 cent from 2 companies and 13 cent from other 2 companies.
- Comments/questions about our plant
  - The proposed technology was electric power generation with waste incineration previously, but your proposal is the technology that we have never heard before.
  - We consider the purchase price 8 cent from EDC is a relatively better price.
  - Q: How much electric power can you generate with your proposed technology using wastes from the whole Phnom Penh Capital?
  - A: According to the current data of wastes in Phnom Penh Capital, 60 to 70% of approximately 2,000t is raw waste. If that amount of waste ferments with methane, we consider that it may generate approximately 12MK of electric power. In other proposals, we consider that it is not possible to burn 2,000t of wastes (60 70% is raw wastes/30 40% is plastic) and generate electric power.
- Directions about the electric power generation business using wastes
  - As there are many proposals, for electric power generation business using wastes, MME, EDC, and Phnom Penh Capital determined to select a proposal in a bid by making a bid committee.
  - Contact for creation of Procurement/bid is EDC. It may start from the end of this month.



Date and time	2/8/2018 15:15 - 15:45
Venue	COMIN Khmer,
Participants from	Mr. Song Thareth, sale manager
Cambodia	
	Kobayashi, president (Cambodia branch, Kojimagumi), Mr. Toleng
	Higuchi, department manager (Chiyoda Kenko Co., Ltd.)
Contents of the	<ul> <li>Confirmation of construction related matters</li> </ul>
meeting	

Date and time	2/8/2018 16:45 - 17:45
Venue	MOE, EIA office
Participants from	Mr. Danh Serei (director of the office), Mr. Doung Samkeat (deputy
Cambodia	director of the office)
	Kobayashi, president (Cambodia branch, Kojimagumi), Mr. Toleng
	Higuchi, department manager (Chiyoda Kenko Co., Ltd.)
Contents of the	➢ EIA
meeting	

➢ We will explain about the plant.

- This project is implemented using the scheme called JCM of MoEJ.
- Raw wastes ⇒ methane gas ⇒ generate electric power After methane fermentation, composts will be produced using residues.
- For the selling price of electric power, EDC proposed 8 cent.
- We come here to confirm about EIA.
- ➢ From the director of the EIA office:
  - After hearing from you, EIA is necessary based on the EIA ordinance. Basically, EIA is necessary for (i) methane fermentation, (ii) electric power generation, and (iii) production of composts, respectively. However, your proposed pilot plant (50t/day) is a small-scale, therefore, EIA can be conducted as one package. For procedures/methods of EIA, please conduct while consulting a consultation company.
  - As the Ministry of Environment, we will support your project that can contribute to the environment. For the selling price of electric power, the Minister of Environment will request EDC to purchase with a higher price.
  - We consider the purchase price 8 cent from EDC is a good price. For other projects, the prices is within 7 cent.



Date and time	2/7/2018 18:20 - 20:00
Venue	In Phnom Penh Capital
Participants from	Mr.Noy, business person, advisor of Minister of Agriculture
Cambodia	
	Kobayashi, president (Cambodia branch, Kojimagumi), Mr. Toleng
	Higuchi, department manager (Chiyoda Kenko Co., Ltd.)
Contents of the	Introduction of the plant using heat
meeting	

We will explain about the plant.

- Due to methane fermentation of wastes, electric power can be generated in CHP and heat can also be collected.
- We would like you to introduce factories who may purchase collected heat.
- ► From Mr. Noy,
  - He cannot introduce anyone as he doesn't know about factories using heat.

Date and time	2/9/2018 14:30 - 17:30
Venue	Province office of Battambang, COMPED compost production
	facility
Participants from	Vice governor of Battambang province, Environment department of
Cambodia	the province, representatives of the city
	Kobayashi, president (Cambodia branch, Kojimagumi), Mr. Toleng
	Higuchi, department manager (Chiyoda Kenko Co., Ltd.)
Contents of the	Regarding a compost production plant from wastes BY COMPED
meeting	

We interviewed about situations of general waste gathering in the Battambang province and explained about the electric power generation plant using methane fermentation.

Vice governor of the Battambang province told us that he is interested in our plant.

With a guide of Mr. Phalla of COMPED and representatives of the province environment department and waste of the city, we visited the compost production factory next to the general waste treatment facility of the Battambang province. We also visited the wholesale market of vegetables and fruits in the city.

- > Department of Hazardous waste Management of MOE
  - The ministry have been raising fund from united nation for industrial development organization (UNIDO) on plastic and other non-deco positing waste treatment. This fund have been approved to 5 developing country in Asia including Cambodia.
  - The steps of the project, the department will perform a feasibility study on the project.
  - The department is in charge of implementation this project. So, the department have chosen Battambagn province to be the candidate site of the project.
  - The fund pledged to provide by UNIDO is at around 1 Million dollars.
  - So, the department asking for corporation for the provincial administration to implement the project.
- Kanagawa Research Team
  - Explain of our proposing project "Organic waste methane fermentation/ Power generation plant".
  - The feasibility have also been performing in Phnom Penh. And also wish to do that in other province including Battambang Province.
  - $\circ~$  So, we hope that we can work with the province in implementation our project.
- Vice-provincial governor.
  - The province administration is always welcome for any party who with to invest or work related to waste management in the province. Previosly, COMPED have been working for year in do composting fertilizer. Now, department as well as Kojigumi Co., Ltd have proposing other 2 projects related to waste management in province, Battam Bang City. The province as well as BTT city welcome and will support the proposal. And will work the make the proposal possible.
  - $\circ$  General information related to waste management information.
    - Under the project of ADB-MPWT (Ministry of Public work and transportation), BTB have received some project related to waste manage project. One which, a recycling plant in BTB city landfill. The plant will sorting recycle material from all waste disposed by the city.
    - In around 10 years, the BTB also plan to move the landfill the other site situated around 20 Km from the city. BTB through MPWT is proposing to ADB for fund for the establishment of this new landfill. The present landfill nearby the city center. The new place that BTB expect that move to will be at border of BTB city and other one of district. So, that both BTB city and the district can use the same landfill.
    - The landfill is using nowday, is CINTRI landfill with the area of around 10 hectra. Onsite, there is COMPED's composting fertilizer site and one ADB recycling plant.
    - In BTB city, there are company performing the collecting waste 1)

CINTRI almost the whole area of the city and 2) Leng Lim= one Sangkat, of the city.

• After the meeting BTB officer will guide to the visit landfill.



- > LANDFILL, COPED COMPOSTING FERTILISER PLAN VISITING
- We visited the general waste disposal site and compost plant in Battambang Province, with the invitation of Mr. Phalla. Of COMPED and State Environment Bureau and City Waste Representative. We also inspected vegetables and fruit wholesale market in the city.







Date and time	2/10/2018 15:30 - 17:30
Venue	In Phnom Penh Capital
Participants from	Mr.Visoth, head of the Environment department of Siem Reap province
Cambodia	Mr.Visoth, president of BEETLE Corp., Sihanoukville general waste
	collection company
	Kobayashi, president (Cambodia branch, Kojimagumi), Mr. Toleng
	Higuchi, department manager (Chiyoda Kenko Co., Ltd.)
Contents of the	> Regarding the electric power generation plant using methane
meeting	fermentation

> Under the auspices of ADB, Battambang City is building a recycling plant in Landfill.

In Phnom Penh Capital, we had the opportunity to explain about the electric power generation plant using methane fermentation to the head of the Environment department of Siem Reap province and the president of Sihanoukville general waste collection company.

We received explanation from both persons about the current situation of general waste gathering/treatment in Siem Reap and Sihanoukville.

Especially, BEETLE Corp., Sihanoukville general waste collection company, has just made a 10-year contract with the City about general waste gathering in Sihanoukville.

\* We have the information that the land price of Dangkao in the suburban of Phnom Penh is rising, where we consider as the candidate site of the plant construction.

There is also the information that the other waste treatment project will purchase the 3ha plant site in the same area.

As the plant construction site, we also consider around Along Tomnub Kobsrou Road in the suburban area.

\* The purchase price of electric power proposed from EDC is 8 cent, therefore, it is a severe condition for business profitability. However, the Ministry of Energy and the Ministry of Environment told us that they will encourage EDC to purchase from this project with a higher price, if construction of the plant becomes embodied.