



JASTIP-WP2 Activity Report

JASTIP

Professor Hideaki Ohgaki
Institute of Advanced Energy
Kyoto University

JASTIP (Japan ASEAN Science and Technology Innovation Platform) Program

To establish the “Japan – ASEAN Collaborative Research **Framework**”

- Aims at contribution to SDGs, to solve the global issues through promoting international (ASEAN-Japan) collaboration researches in the fields of **Environment & Energy,** bio-resource & biodiversity, disaster prevention.
- To implement the collaboration research outcomes to the real society.

Project Structure

JASTIP Head Office
Kyoto University ASEAN Center



Networking
Social implementation
Getting External Budget



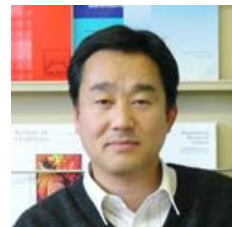
Environment and Energy
National Science and Technology
Development Agency (NSTDA, Thailand)



Disaster Prevention
Malaysia-Japan International Institute of
Technology (MJIIT)



Bioresources and Biodiversity
Indonesian Institute of Sciences (LIPI)



Energy & Environment Joint Lab.(WP2)

- Place : National Science and Technology Development Agency, Thailand
 - President, Dr. Narong Sirilertworakul
 - Project leader : Dr. Thumrongrut Mungcharoen
 - Japan side representative : Prof. Hideaki Ohgaki/Keiichi Ishihara
- Function
 - Promotion and coordination of collaboration researches (including “JASTIP-NET” CRs)
 - Technology Transfer
 - Training young researchers (students)



2016 Activities

- MOC on collaboration research and coordination
- Collaboration Research, Lab work (+ individual budget)
- Annual workshop and steering committee meeting
- Researcher/students dispatch and invitation for collaboration research
- Promotion of “JASTIP-NET” collaboration research



Collaborative Research Agreement
on
Japan-ASEAN Science, Technology and Innovation Platform on
“Energy and Environment”
between
Kyoto University
and
National Science and Technology Development Agency

This Agreement is made and entered into this 23 day of September, 2016 (the “Effective Date”) at 111 Thailand Science Park, Phahonyothin Road, Khlong Nueng, Khlong Luang, Pathum Thani, 12120, Thailand, by and between

Appendix A Project Descriptions

Project Directors

KU Project Director: Prof. Dr. Hideaki Ohgaki, Institute of Advanced Energy, Kyoto University

NSTDA Project Director: Asst.Prof. Dr.Suthum Patumsawad

Appendix A-1 Photocatalytic conversion of biomass to value-added fuels and chemicals

Collaboration responsibilities

Evaluations of photocatalytic conversion of biomass to value-added fuels and chemicals and complementation to enzymatic process, and fabrication of high-selectivity photocatalysts and development of photo-bio flow reactor for conversion of lignocellulose-derive components to chemicals

Coordination Activities Agreement

This Agreement is made and entered into this 1 day of April 2016 (the “Effective Date”) at 111 Thailand Science Park, Phahonyothin Road, Khlong Nueng, Khlong Luang, Pathum Thani, 12120, Thailand, by and between

Kyoto University (hereinafter referred to as “KU”), located at 36-1, Yoshida-honmachi, Sakyo-ku, Kyoto-shi, Kyoto 606-8501, JAPAN, represented by President Juichi Yamagiwa, as evidenced by Certificate of Complete Historical Records dated on the 1st day of October, 2014 (A.D.), Appendix A attached hereto, and

National Science and Technology Development Agency (hereinafter referred to as “NSTDA”) located at 111 Thailand Science Park, Phahonyothin Road, Khlong Nueng, Khlong Luang, Pathum Thani, 12120, Thailand, represented by Narong Sirilertworakul, as evidenced by order of National Science and Technology Development Agency Board of Directors No. 1/2559 dated on the 25 day of January B.E.2559 (A.D.2016), Appendix B attached hereto.

Objectives

This Coordination Activities Agreement describes the tasks that NSTDA will perform to facilitate and promote the JASTIP WP2 activities.

Joint Seminar under JASTIP program

—Innovations in Application of Sustainable Sources for Material Synthesis and Energy Devices—

Participants Graduate School of Engineering, Kyoto University

N. Sano (Associate Professor)

Shoichi Amiuchi (M2)

Kensuke Tsubouchi (M2)

Teppei Hata (M2)

Tomohiro Shimizu (M1)

Daiki Hirai (M1)

Schedule

August 31 Depart from KIX

September 1 Seminar in NANOTEC Center/NSTDA

September 2 Lab visit at Center of Excellence in Particle Technology,
Chulalongkorn University

September 3 Depart from Bangkok

40 days Students Internship Program

supported by

“Wild and Wise program” Kyoto U.

- JASTIP-WP2 CR groups invite 10 students from Thailand
 - KMITL: 2, KMUTT: 5, Chularongkorn: 3



Structure of the Joint Lab.

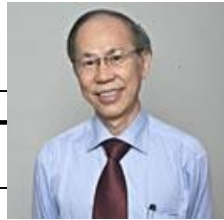
Working Group Committee

NSTDA joint lab



B2EC program : NSTDA-Kyoto U.

SATREPS extension program : JGSEE/KMUTT



Photocatalysis program : KMITL



RE Implementation program : ASEAN

Sarawak Project (UM)
PV installation study(UY)



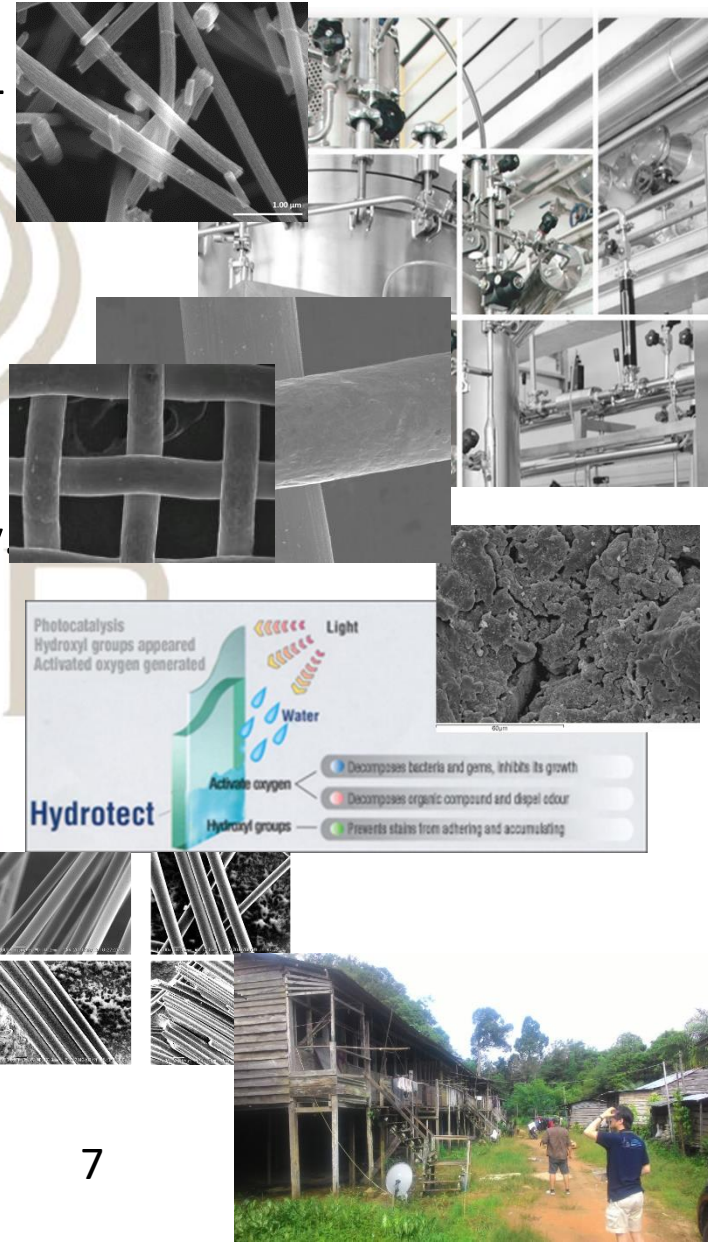
Project member

	Thailand	Japan
Joint Lab. leader	Thumrongrut Mungcharoen (NSTDA)	Hideaki Ohgaki(Kyoto)
Biomass to Energy and Chemicals @ NSTDA	Sumittra Charojrochkul (MTEC)	Takeshi Abe(Kyoto)
	Kajornsak Funawakij (NANOTEC)	Noriaki Sano(Kyoto)
	Verawat Champreda (BIOTEC) Navadol Laosiripojana(JGSEE)	Takeshi Sagawa(Kyoto)
SATREPS extension @ JGSEE/KMUTT	Bundit Fungtammasan (KMUTT)	Koichi Miura(Kyoto), Katsuyasu Sugawara(Akita U)
Photo catalysis program @ KMITL	Wisanu Pecharapa (KMITL)	Keiichi Ishihara(Kyoto)
RE implementation program @ ASEAN	Nasurdin Bin Abd Rahim (UM) Hla Toe (UY-SU)	Hideaki Ohgaki(Kyoto), Keiichi Ishihara(Kyoto)

Coordinator : Ms. Papitchaya Utanun

Joint Research Activities

- ❑ Photocatalytic conversion of biomass to value-added fuels and chemicals (NSTDA-JGSEE/KMUTT-Kyoto Univ.)
- ❑ Development of Carbon Materials from Biomass for Energy Storage Applications(NSTDA- Kyoto Univ.)
- ❑ Innovations in Biomass Application for Catalytic Material Synthesis and Energy Devices (NSTDA-Chulalongkorn Univ.-Kasetsart Univ.-Mahidol Univ. VISTEC-Naresuan Univ.-Kyoto Univ.)
- ❑ Extension of “Solvent Treatment Method” developed by SATREPS program to ASEAN region (JGSEE/KMUTT-Kyoto Univ.)
- ❑ Development of New Functional Materials for Energy and Environment (KMITL-RMUTT-Kyoto Univ.)
- ❑ RE implementation (University of Malaya-Kyoto Univ., University of Yangon-Kyoto Univ.)



JASTIP-net 2016 Research Themes

(2) Environment and Energy Joint Laboratory

(Core Researchers: Prof. Hideaki Ohgaki, Prof. Keiichi Ishihara)

- **Research Theme:**

1. Studies on Rural Electrification by Renewable Energy.
2. Studies on Implementation of Renewable Energy in the ASEAN region.
3. Studies on Energy Development in the ASEAN region.

We will revise next 2017 application.

JASTIP-Net WP2 2016-

- Nasrudin Abd Rahim, University of Malaya
"Study on energy usage and quality of life for rural community through rural electrification using renewable energy"
- Mohd Amran Mohd Radzi, Universiti Putra Malaysia
"Optimal design of green energy systems based on multi-renewable resources for rural electrification"
- Takuo Nakayama Kyoto University – VNU, Hanoi
"Local energy governance" and Community renewable energy (CRE) in Vietnam"
- Chatchawan Chaichana, Chiang Mai University
"Community renewable energy implementation in Thailand "



JASTIP-Net WP3 (+WP2) 2016-

- Euis Hermiati, LIPI - NSTDA (Dr. Verwat)

“Development of integrated process for conversion of sugarcane trash to bioethanol and value-added chemicals”

Japan - ASEAN
Science, Technology and
Innovation Platform

2016 Budget

2016/4/6		K JPY
NSTDA-KU Biomass to Energy and Chemicals	MTEC	900
	NANOTEC	900
	BIOTEC	900
	Office rental	1,000
JGSEE-KU SATREPS extension		300
KMITL-KU Photo catalysis program		500
RE implementation program		500
Personal Expense*		5,000
Travel Expense		4,000
Others		500
Total		14,500

Includes 1,000 left over from 2015

Budget (submitted to JST)

Unit : 1000 JPY

	2015	2016	2017	2018	2019	2020 (-Sep)	Total
Equipment	5,150	500	500	500	500	0	7,150
Consumables	4,360	2,000	2,000	2,000	2,000	1,000	13,360
Travel Expense	4,600	3,360	3,360	3,360	3,360	1,280	19,320
Personal Expense	2,900	5,040	5,040	5,040	5,040	2,520	25,580
Others*	2,990	2,600	2,600	2,600	2,600	1,200	14,590
Total	20,000	13,500	13,500	13,500	13,500	6,000	80,000

*Include preparation for collaboration research lab (office) in NSTDA : 750,000 JPY
and its' rental fee and consumables for PRPs : 200,000 JPY/ month

*All budget allocates to Kyoto University and will be available through KU collaborators.
Annual rental fee will be paid to NSTDA directly.*

We expect our core center can bring external budgets.

JASTIP活動のオールジャパン・オールASEAN体制推進のための会議等（JASTIP主催共催）

2015年

11月30日 Myanmarにおける電力事情 アジア大洋州住友商事ヤンゴン事務所 大西 克彦
ヤンゴン 太陽電池設置計画打ち合わせ
12月1日 Kyocera Asia Pacific (Thailand) Co., Ltd. 南川 和 則

2016年

4月22日 Kasetsart Universty. Hideaki Ohgaki (KU), Thumrongrut Mungcharoen and Ms.Papitchaya Utanun (NSTDA)
NSTDA Yothee Office meeting
1) Mr. Yoshihide Kobayashi JST coordinator
2) Mr. Thumrongrut Mungcharoen Chairperson of Energy and Environment Cluster, NSTDA
3) Mr. Suthum Patumsawad Director of Renewable Energy and New Energy Technology Program, NSTDA
5月2日 4) Ms. Jantana Suksai Senior Analyst, NSTDA
5) Ms. Kitsirirat Koonkuer Analyst, NSTDA
6) Ms. Papitchaya Utanun Analyst, NSTDA
7) Ms. Thammananya Sakcharoen Analyst, NSTDA

NSTDA Yothee Office.
1) Mr. Hideaki Ohgaki Kyoto University, 2) Mr. Sonobe Taro Kyoto University, 3) Mr. Akira Takagi JASTIP, 4)
7月6日 Mr. Thumrongrut Mungcharoen NSTDA, 5) Mr. Suthum Patumsawad NSTDA 6) Ms. Jantana Suksai NSTDA 7) Ms. Kitsirirat
Koonkuer NSTDA 8) Ms. Papitchaya Utanun NSTDA 9) Ms. Thammananya Sakcharoen NSTDA

産業技術総合研究所つくばにて今後の協力についての打ち合わせ
8月5日 秋田知樹、研究企画室長 産業技術総合研究所
小原春彦、研究戦略部長 産業技術総合研究所
坂西欣也、福島再生可能エネルギー研究所所長代理 産業技術総合研究所
9月12日 Queen Sirikit National Convention Center. Hideaki Ohgaki (KU), Thumrongrut Mungcharoen and Ms.Papitchaya Utanun
(NSTDA)
NSTDA Yothee Office
Executive meeting
Mr.Yasuyuki Kono(KU) , Mr.Taro Sonobe and Mr.Akira
September 23, Takagi Mr.Narong Sirilertworakul (President of NSTDA) Mr.Thumrongrut Mungcharoen, Ms.Chadamas Thuvasethakul
(Executive Vice President), Ms.Pattharaporn Suntharasaj (Director of International Cooperation
Division),and Ms.Papitchaya Utanun from NSTDA

マレーシアにて協力の打ち合わせ
11月14日 大谷謙仁、再生可能エネルギー研究センターエネルギーネットワーク研究チーム長 産業技術総合研究所
篠原裕文 電気安全環境研究所

12月2日 タイにて協力の打ち合わせ （予定）
仁木栄、再生可能エネルギー研究センターセンター長 産業技術総合研究所

JASTIP関係者が参加し、JASTIP活動について講演等した会議

8月11-12日 インドネシア・ジャカルタでのInternational Symposium “TROPICAL PEATLAND RESTORATION”にて“Biomass Energy in
ASEAN and Possible Utilization of Biomass in the Peat Land”という題目にて招待講演
10月30日ー ラオス・ビエンチャンでのJOINT RESEARCH PROGRAM WORKSHOP on “Green and Renewable Energy Technology for
11月1日 Sustainable Environment”にて“Invitation to Join International Collaboration Research on Renewable Energy by Japan-
ASEAN Science, Technology and Innovation Platform (JASTIP) - WP2”という題目にて招待講演
アセアン・ジャカルタでのClimate Change and Technology 2016にて“Invitation to Join International Collaboration
Research on Renewable Energy by Japan-ASEAN Science, Technology and Innovation Platform (JASTIP) - WP2”という題目にて招待講演

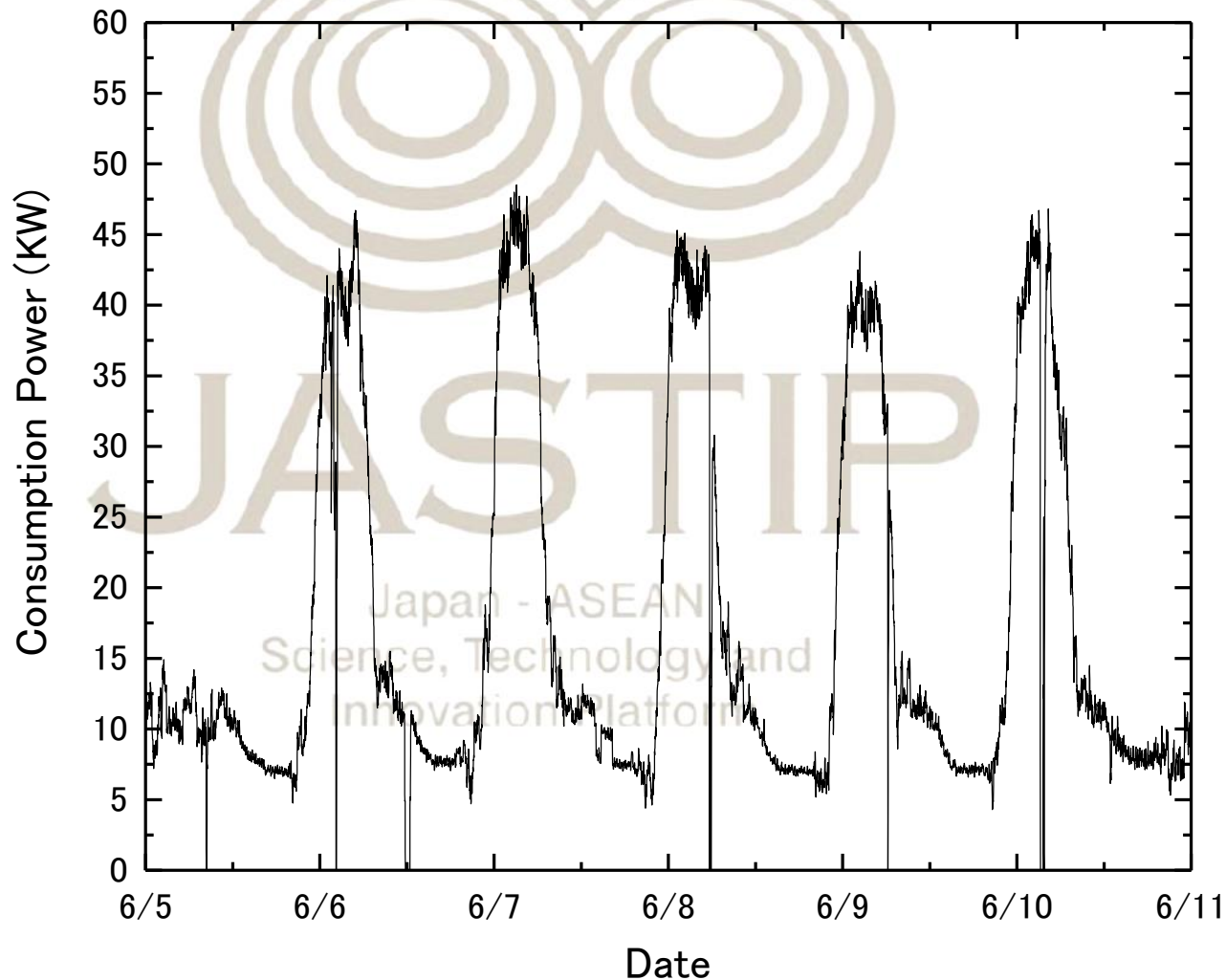
PV installation program in University of Yangon

- Member
 - Pho Kaung, Yangon University
 - Hla Toe, Pyay University (Yangon University)
 - Aye Aye Thant, Yangon University
 - Kazunori Minamikawa, Kyocera
 - Yuuji Sugiyama, Kyocera
 - Yo Hamada, Kyocera
 - Hideaki Ohgaki, Kyoto University

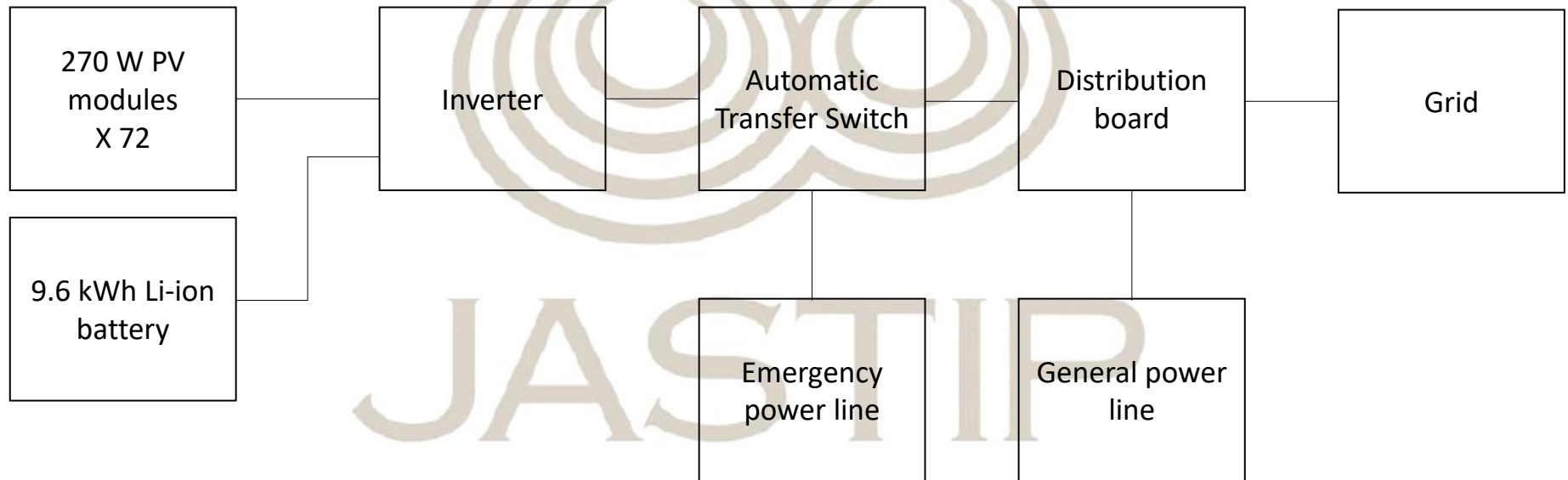
Project background

- UY wants to set up solar PV system by education and PV research.
- To supply a stable electricity, installation of MEGA-Solar system of -2 MW has been planned in UY which will be separated from national grid system.
- For the first step of the project, small scale PV system has been designed and installing.

Typical Electricity Consumption Pattern in Science Building

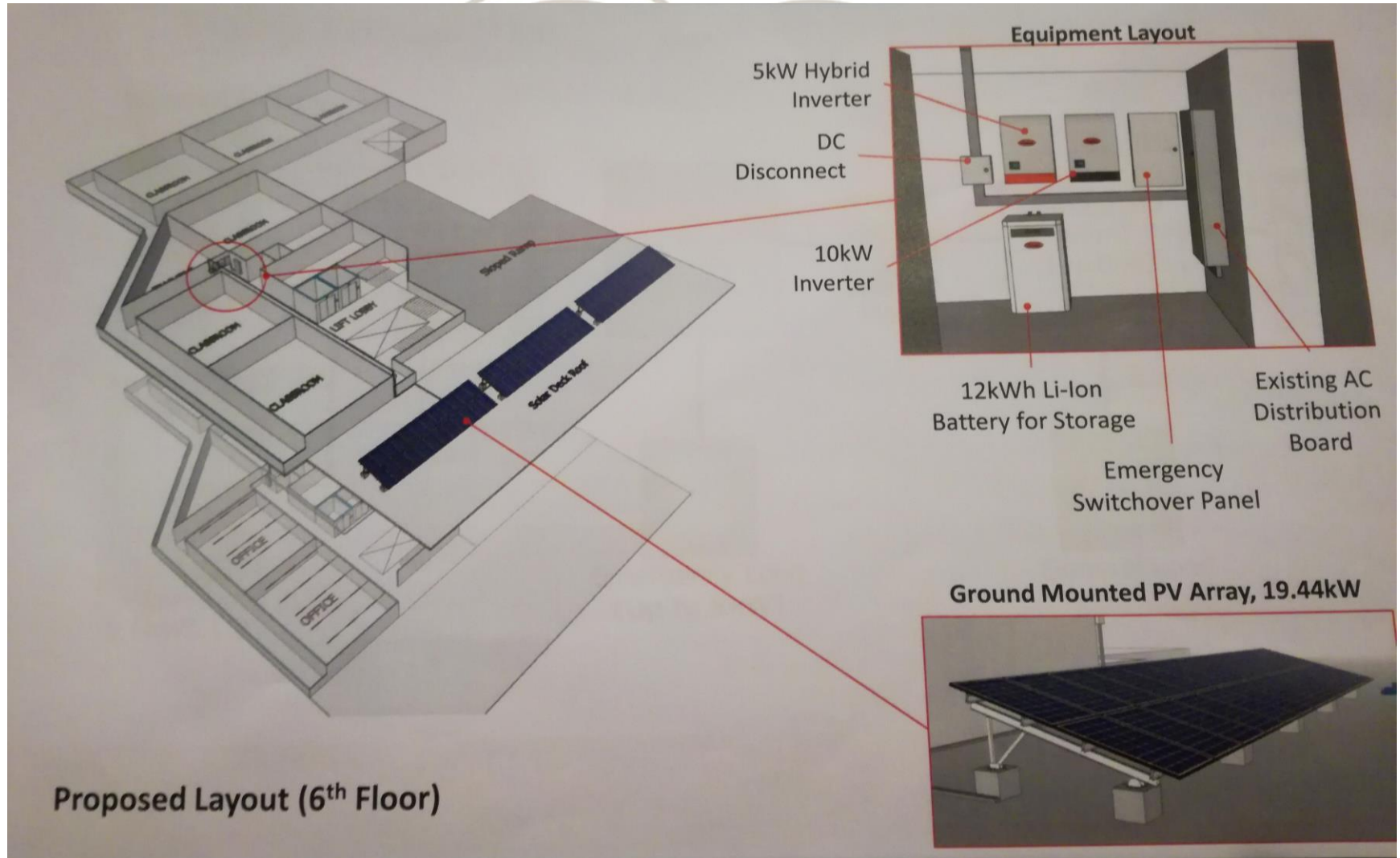


Designed Grid-Tied PV system



Maximum 5 kW

PV layout





Nov.7, 2016



Nov.22, 2016

Japan - ASEAN
Science, Technology and
Innovation Platform

Start monitoring from end of this year.
Adding 10 kW panel
Start designing 2 MW system

JASTIP-NET

- Collaboration Research Proposal **opened for ASEAN researchers** to implement “ALL ASEAN – ALL JAPAN” policy.
- ~10 proposals / year (started from 2016)
- 1M JPY (~9,000 USD) / CR
- Energy&Environment, Bio-resource&Biodiversity, Disaster Prevention, and Interdisciplinary Research
- KU researcher has to be dispatched each CR.
 - budget management

Dialogue with non-academic stakeholders

Environment and Energy

Disaster Prevention

Bioresources and Biodiversity



ASEAN SDGs
stakeholders,
private sector



ASEAN universities
and research
institutes



Japanese SDGs
stakeholders,
private sector



Japanese universities
and research
institutes

JASTIP-Net

<http://jastip.org/en/eventinfo/call-for-jastip-net-2016/>

Study on Energy Usage and Quality of Life for Rural Community Through Rural Electrification using Renewable Energy

- aims
 - to study **the energy usage pattern** and **lifestyle** before and after rural electrification of rural community in interior Sarawak, Malaysia
 - to find the **effective approach of implementing rural electrification** by survey on the differences and/or similarities between the energy usage pattern and life style of the villages under different rural electrification schemes

Methodology

- Site : Iban communities at Batang Ai with different rural electrification schemes.
- At least two villages will be studied, one under government's rural electrification project, while the other will be electrified by the project team, using mainly solar energy.
- How are the energy usage pattern and living life style of the villagers under rural electrification scheme.

Methodology

- Implement a different rural electrification scheme in at least one other village which is not currently electrified by the government.
- The energy usage pattern and living life style of the village under this different rural electrification scheme will be studied.
- Based on the findings on the differences and/or similarities between the energy usage pattern and life style of the villages under different rural electrification schemes, the more effective approach of implementing rural electrification can be deduced

Team member

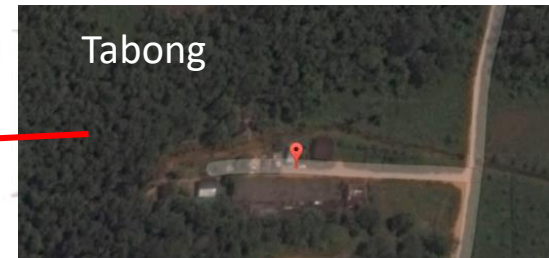
PI : Nasrudin Abd Rahim

(initiated by Prof. Hew Wooi Ping)

- Che Hang Seng, UMPEDAC, University of Malaya
- Wallace ShungHui Wong, Swinburne University of Technology Sarawak
- Mohd Amran Mohd Radzi, Universiti Putra Malaysia
- Hideaki Ohgaki, Kyoto University
- Hooman Farezane, Kyoto University
- Fumihiro Yamane, Hiroshima City University

Site visits

- *Iban* villages (2016 April)
 - Menangkin and Tabong



- Batang Ai Reserve Area (2016 October)
 - Jengin longhouse



Current Situation

- All of family have their own generator driven by fossil fuel. (2-3 hours/day)
- These generators run almost everyday to supply lighting (definitely), charging cell phone, TV, and so on.
- They can offer some additional money to get more electricity...





n - ASE
Technol
ion Pla



Survey on Quality of Life



- Interviewed 20 villagers from 20 to 71 years old.
- QOL is measured by Health, Education, Personal Activities, Political voice and governance, Social connections, Environmental conditions, Personal insecurity [1].
- In this survey the Wisconsin QOL indicators [2] was used as the questionnaire which consists of
 - General Satisfaction Level, Activities and Occupations, Psychological Well-Being, Symptoms/Outlook, Physical Health, Social Relations/Support, Money, Activities of Daily Living, Goal Attainment.
 - Energy-related questions to assess the villages' energy access improvement

Survey on Quality of Life: result

- Most of the villagers (75%) are under primary school
- their incomes are lower than average (RM 3,831/month[3])
- > 90% villagers are satisfied their lives
- Thinking importance to connect with neighbors, and are in good health/mental conditions.
- Personal activities, i.e. watching movies or going for shopping, are at very low level because their transportation conditions are very poor.
- We will continuously monitor their QOL to observe how villagers' QOL will be changed. We also plan to extend the study sites for a comparison.

Observed

- Feels happy in an uniform living pattern, no other choice.
 - happiness in limited daily activity and limited access to outside
- ⇒ Infrastructure, energy and **road access**, development will cause variety of the living pattern and happiness...
- ⇒ Diversify the lifestyle and thinking way

Summary

- JASTIP has been started as CR PLATFORM, may say “not CR itself” to bring research outcomes into society to contribute sustainable future in ASEAN & Japan.
- We coordinate researchers who are thinking set up or upgrade CRs between ASEAN and Japan in E&E field, and promote applicable programs.
- JASTIP-Net has also been launched.
- CR on rural electrification in Sarawak has been launched between UM-UPM-KU.
- Waiting for much proposal!!

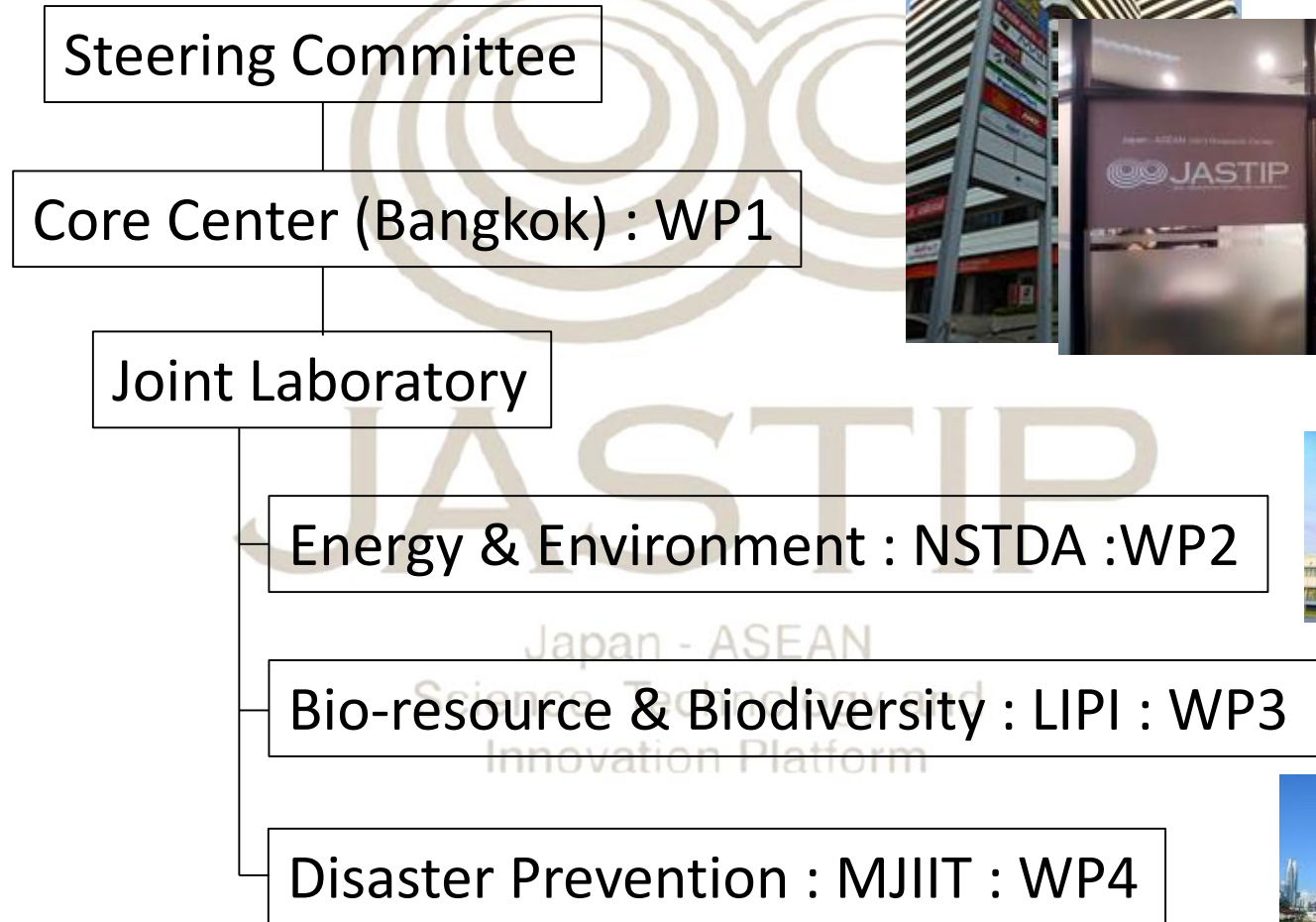
Thank you for your kind attentions.

References

- [1] J. E. STIGLITZ, A. SEN, and J-P FITOUSSI, “Report by the Commission on the Measurement of Economic Performance and Social Progress”.
- [2] M.A. Becker, B.R. Shaw, and M.L. Reib, “QUALITY OF LIFE ASSESSMENT MANUAL” .
- [3] Department of Statistics Malaysia, “Report of Household Income and Basic Amenities Survey 2014”.

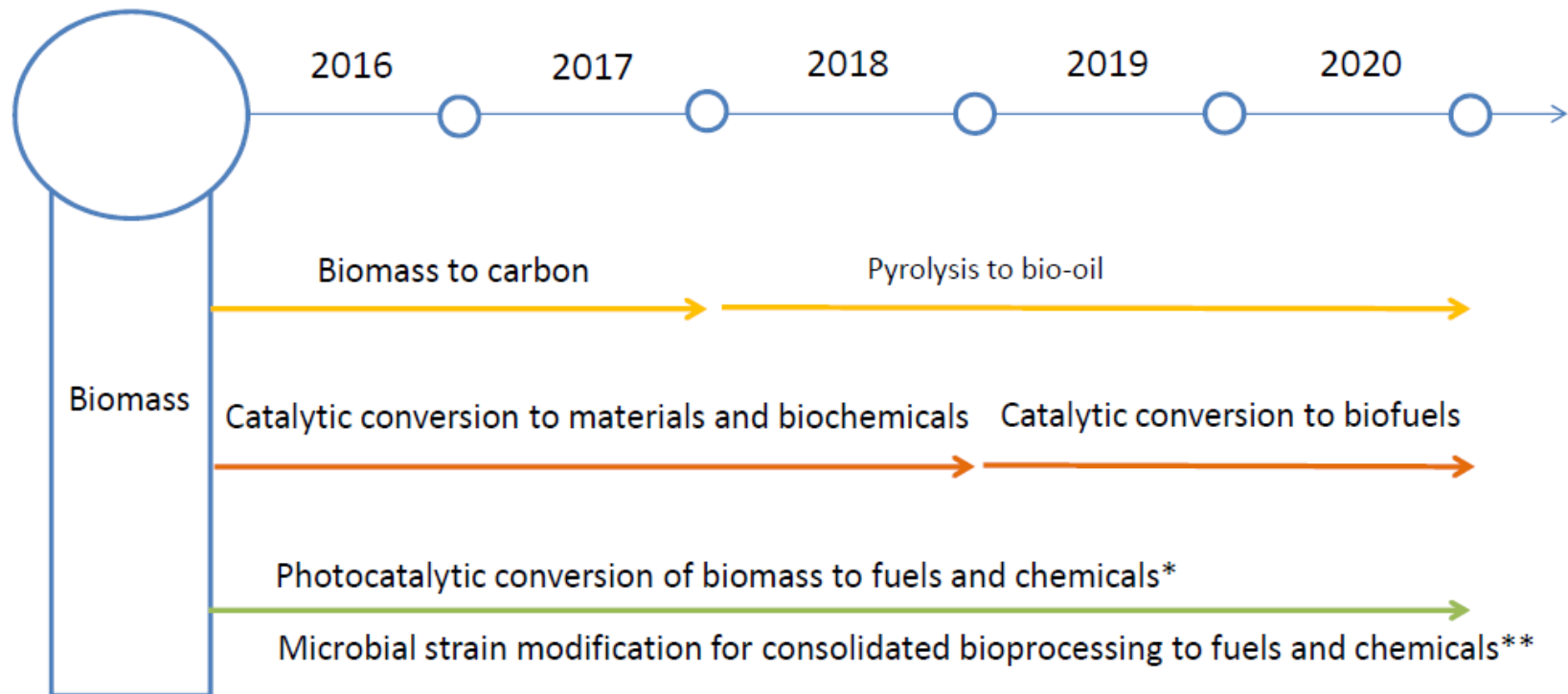


Project Structure



Renewable energy and new energy technology program

NSTDA-Kyoto U: Biomass to Energy and Chemicals[B2EC]



→ **MTEC**
a member of NSTDA

→ **NANOTEC**
a member of NSTDA

→ **BIOTEC**
a member of NSTDA

JGSEE
The Joint Graduate School of Energy and Environment

:Prof.Takeshi Abe

:Assoc.Prof. Noriaki Sano, Department of Chemical Engineering

*Existing collaboration via JGSEE/ **under contact

(3) Bioresources and Biodiversity Joint Laboratory

(Core Researchers: Prof. Mamoru Kanzaki, Prof. Takashi Watanabe)

- **Research Theme:**

1. Studies on Biodiversity in the ASEAN Region Contributing to the Improvement of Identification, Collection and/or Information.
2. Sustainable Utilization of Bioresources for Biorefinery, Bioremediation, Wood Construction, Food or Medicine.
3. Plant Improvement for Agroforestry Systems and Carbon Sequestration Contributing to the Mitigation of and/or Adaptation to Climate Change.

JASTIP-Net WP3 (+2) 2016-

- Euis Hermiati, LIPI - NSTDA (Dr. Verwat)

“Development of integrated process for conversion of sugarcane trash to bioethanol and value-added chemicals”

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Innovation Platform

Research Procedure

- Site visits will be made to Batang Ai to identify the villages around that region that are suitable to be included in this study. Surveys and site inspections will be conducted to understand the existing energy usage patterns and life styles of the villages that have been electrified as well as those which are still not electrified.
- Implementation of rural electrification onto selected (unelectrified) village.
- Training will be provided to the villagers to expose them to proper methods of handling and using the solar energy system as well as the electricity network.
- Site visits to the sites on a regular basis to monitor the installed systems and to record the energy usage pattern and life style changes in the villages under different rural electrification schemes.
- The results collected throughout the project will be analyzed, compiled and finally reported.

Break down of submitted 2015 budget (JPY)

- Equipment* : 5,150k
 - Diffuse Reflectance Accessory (for FTIR), Micro Balance, Sonoreactor
- Consumables : overall 4,360k
- Travel Expense : 4,600k
 - Jpn2ASEAN : 3,220k: 4persons/1week, 3persons/3days, invitation to workshop 10persons/3days
 - ASEAN2Jpn : 1,200k: 4persons/1week
 - Jpn2Jpn : 180k: 4persons/2days
- Personal Expense 2,900k
 - Coordinator : 1,500k (250k/mon x 6mons)
 - Part-time Researcher : 240k (40k x 6mons)
 - Office Assistant : 1,080k (180k/mon x 6 mons)
- Others 2,990k
 - Meeting (opening ceremony&workshop) : 400k
 - Shipment fee : 300k
 - Office charge : 1,200k (200k/mon x 6 mons)
 - Office renovation cost : 750k
 - Printing : 340k

*Equipment list is temporary ones. (changeable)

All budget can relocatable.