

Outline of Debrief Session of “Practical Research and Education of Solid Waste Management Based on the Partnerships among Universities and Governments in Asia and Pacific Countries” in FY2010

PROGRAM

Date: 13:20-17:00, January 25, 2011

Venue: Lecture Room I of the Graduate School of Natural Science and Technology Building

- 13:20-13:30 **Opening Address**
Prof. Takeshi Fujiwara
- 13:30-13:45 **Developing Disinfection/Volume-reduction Technologies for the Composting of the Waste with High Moisture Content**
Prof. Yukitaka Kimura
- 13:45-14:00 **Development of Technologies for the Reutilization of Agricultural and Forestry Waste**
Assoc. Prof. Md. Azhar Uddin
- 14:00-14:15 **Utilization of Food Waste for Agricultural Applications on Pacific islands**
Prof. Mari Marutani and Assoc. Prof. Yoshiro Kishida
- 14:15-14:30 **Development of Indicators for the Establishment of a Sound Material-cycle Society**
Assist. Prof. Takehito Ujihara and Prof. Hirofumi Abe
- 14:30-14:45 **Evaluation of the Performance of the Final Disposal Facility of Waste: Enhancement of the Dielectric Monitoring Method**
Prof. Yuji Takeshita and Assoc. Prof. Mitsuru Komatsu
- 14:45-15:00 **Development of a Standardized Monitoring System for Promoting Adequate Landfilling in Asian Countries**
Assoc. Prof. Toru Iwata
- 15:00-15:15 **Tea Break**
- 15:15-15:30 **Water Quality Survey on Heavy Metal Pollution from Waste Disposal Facilities in Pacific Countries**
Assoc. Prof. Hideaki Nagare
- 15:30-15:45 **Waste Survey and Establishment of Solid Waste Management in Palau**
Prof. Takeshi Fujiwara and Mr. Menkur W. Rechelulk
- 15:45-16:00 **Waste Survey and Establishment of Solid Waste Management in Guam**
Prof. Takeshi Fujiwara
- 16:00-16:15 **LCC/LCA on waste management and 3Rs promotion in Vietnam**
Assoc. Prof. Yasuhiro Matsui and Dr. Nguyen Phuc Thanh
- 16:15-16:30 **Evaluation of the Policy Effect of the Pay as You Throw (PAYT) Systems on Household Solid Waste Reduction and the Potential Environmental Impacts- A Case Study in Taiwan**
Assist. Prof. Yu-Chi Weng, Prof. Takeshi Fujiwara, Prof. Sue-Jane Lin and Prof. Hwong-Wen Ma
- 16:30-16:45 **Tea Break**
- 16:45-17:10 **Wrap-up Discussion**
- 17:10 **Closing Remarks**
Prof. Hirofumi Abe

SUMMARY

This Debrief Meeting was held as the second official event of the partnership project on education and research program “Practical Research and Education of Solid Waste Management Based on the Partnerships among Universities and Governments in Asia and Pacific Countries”. The meeting’s participants consisted of the staff and students of Okayama University who interested with the meeting’s contents.

The meeting’s presenters consisted of 11 members of Okayama University and/or invited experts from collaborator countries who were engaged in the research themes of the project; such as China, Thailand, Vietnam, Malaysia, Indonesia, Guam, and Palau. They exchanged opinions with each other.

Firstly, Prof. Takeshi Fujiwara, Vice Director of Solid Waste Management Research Center, Okayama University, presented the opening remarks for this session.

Professor Yukitaka KIMURA of Okayama University made his presentation entitled “Developing Disinfection & Volume-reduction Technologies for the Composting of the Waste with High Moisture Content”, and introduced the outline of experiment using Superheated Steam as the methodology for volume reduction, pre-pasteurization, and extraction of useful substances from biomass for the waste with high water content, and the experimental results on Asparagus dehydration and extraction of saccharides and peptides from biomass.

Associate Professor Azhar Uddin of Okayama University made his presentation entitled “Development of Technologies for the Reutilization of Agricultural and Forestry Waste”, and introduced the outline of the biomass pyrolysis process and the biomass gasification process, the functions of biochar, the experimental methodology, and the results on evaluation of biochar from agricultural residues including char yield, effect of pyrolysis temperature on the development of specific surface area of the biochar, water adsorption capacity of the biochar, elemental composition, amount of phosphorous eluted from biochar, and carbon content of biochar.

Professor Mari MARUTANI of Guan University and Associate Professor Yoshiro KISHIDA of Okayama University made their presentation entitled “Utilization of Food Waste for Agricultural Applications on Pacific Islands”, and introduced the initiation of a collaborative research and education activities in agriculture between Okayama University and the University of Guam. They also introduced the research on the utilization of food waste for agricultural applications on Guam by two surveys. A questionnaire survey studied on potential food waste providers (hotels and restaurants etc.) to find out how they dispose wet garbage (food waste). The telephone and visit surveys on hog farmers to find out who may be utilizing wet garbage generated from hotels and restaurants also carried out. They also introduced the research plan on developing a pilot food waste processing system to produce local animal feeds and composts in Guam.

Assistant Professor Takehito UJIHARA and Professor Hirofumi ABE of Okayama University made their presentation entitled "Developing of Indicators for the Establishment of a Sound Material-Cycle Society", and introduced the concept of Ecological Footprint value, the research plans on China's ecological footprint and economic growth and quantitative evaluations for "a sound material-cycle society" by focusing on some particular regions, and the environmental load excess ratio in each region of China.

Professor Yuji TAKESHITA and Associate Professor Mitsuru KOMATSU of Okayama University made their presentation entitled "Evaluation of the performance of the Final Disposal Facility of Waste Enhancement of the Dielectric Monitoring Method", and explained the methodology of non-destructive measurements of unsaturated water flow by using ground-penetrating radar, and the experimental result.

Associate Professor Toru IWATA of Okayama University made his presentation entitled "Development of a Standardized Solid Waste Carbon Modeling for Promoting Adequate Landfilling in Asian countries", and explained that the GHG emission was quite site-specific and direct measurement by micrometeorological technique was unrealistic. He also suggested the ideal modeling of CH₄ gas emission.

Associate Professor Hideaki NAGARE of Okayama University made his presentation entitled "Water Quality Survey on Heavy Metal Pollution from Waste Disposal Facilities in Pacific Countries", and introduced the outline of water quality survey in Palau. He explained that the pollution issued from dumping solid wastes was not critical at this moment in Palau based on the water quality indices measured in this research, and that the phosphorus recovery seemed not feasible at the dumping sites in Palau because of the low concentration.

Professor Takeshi FUJIWARA of Okayama University and Mr. Mengkur Rechelulk of Republic of Palau made their presentation entitled "Waste Survey of Solid Waste Management in Palau", and explained the outline of questionnaire surveys for households and business sectors. He introduced the results including household's consciousness of waste management, the quantity of household waste by category, the structures of waste generation and collection.

Professor Takeshi FUJIWARA of Okayama University made his presentation entitled "Technical Visit to Bandung in Indonesia and Ideas of Collaborative Research", and introduced the current status of business waste, waste segregation, waste transportation, composting, and landfill site in Bandung. He also suggested the research proposal and tentative research plan.

Associate Professor Yasuhiro MATSUI and Dr. NGUYEN Phuc Thanh of Okayama University made their presentation entitled "LCC/LCA on Waste Management and 3Rs Promotion in Vietnam", and explained that the aim of the research theme was to evaluate the LCC and life cycle inventory on alternative scenarios on waste management and 3Rs promotion. They also introduced the outline of tracking survey of waste collection vehicle by using GPS/GIS, and the results in Can Tho and Hanoi.

Assistant Professor Yu-Chi WENG and Takeshi FUJIWARA of Okayama University, Professor Sue-Jane LIN of National Cheng Kung University, and Professor Hwong-Wen MA of National Taiwan University made their presentation entitled "Evaluation of the Policy effect of the Pay-as-You-Throw (PAYT) Systems on Household Solid Waste (HSW) Reduction and the Potential Environmental Impacts- A Case Study in Taiwan", and explained the historical trend of the MSW generation, discards and recycling rate in Taiwan, the examples of HSW management implementation and PAST systems. He explained the results on Intervention Time Series Analysis (ITSA), Strategic HSW Policy Assessment with LCA, Contingent Valuation Method (CVM) with econometric analysis, and SWOT (the strengths, the weaknesses, the opportunities, and the threats) Analysis in Taipei city.

The discussion topics were as follows; the cost of this treatment method, the effects to moisture contents of waste after treatment, and the treatment equipments (to Professor Kimura); the balance between cost and benefit and the application capacity in others countries, the application of this technology for treating municipal solid waste, and the balance between GHG reduction and energy content of this technology (to Professor Azhar); the participant roles and sharing costs among stakeholder participations (to Professor MARUTANI and Professor KISHIDA); the methodology of this concept including how to define and calculate the indicators, how to compare to other communities and countries (to Professor UJIHARA); the monitoring method, for example, how to measure and estimate of parameters in others environments (to Professor Takeshita); the application of the model to various landfill types which are popular in Asian countries, the reliable results of the model in cases waste composition changed and different status of different countries, and the methodology and database for modeling (to Professor IWATA); the question "may the citizen behavior for using battery in their daily life affect to heavy metal pollution in waster?", the measurement methods of parameters, the effects of waste composition on pollutants, especially phosphorus (to Professor Nagare); the methodology such as how to develop the predictive model for waste generation by life style, income, family size, number of tourist, etc., and how to collect data and model for household sector and commercial sector (to Professor Fujiwara); the results of this research and the future tasks relating to this research, and the methodology for collecting data and calculating LCA/LCC (to Professor Matsui); the methodology for developing predictive model, including variable selection, explains, database collection, outline of survey, comparison and estimation among study areas(to Professor Weng).

At the final presentation, Prof. Takeshi FUJIWARA, Vice Director of Solid Waste Management Research Center, Okayama University, presented the wrap-up discussion for the debrief meeting. The Solid Waste Management Research Center (SWMRC) of Okayama University proposes the "partnership" project aiming at developing elite human resources in the Solid waste research field to conduct practicable research for taking solid waste problems, with the collaboration of partner universities from Asia-pacific regions,

local authorities in foreign countries where serious solid waste problem occur, and Japanese local authorities.

The final discussion was chaired by Professor Takeshi FUJIWARA of Okayama University, and the suggestions and comments from participants were as follows:

- ✓ Prof. Ashok V. Shekdar, Nagpur Institute of Technology, India: We can link the project's goal to establish a community as a solid waste management community in Asia for sharing knowledge and solving the current problems.
 - Professor Takeshi FUJIWARA: Our project's goal reaches to create the video lectures (e-learning) which we can distribute and share to everyone in the world.
- ✓ Professor Mari MARUTANI of Guan University: Asked about the homepage of the project.
 - Professor Takeshi FUJIWARA: Dr. Weng is developing that homepage. He will send the address to the participants.
- ✓ Prof. Agamuthu Pariatamby, University of Malaya, Malaysia: In our projects, there are many researches. It seemed that the relationships among researches were rather weak.
 - Professor Takeshi FUJIWARA: We have done and presented our researches of the first year. From the second year, we try to link those researches among researchers for more relative.
- ✓ Prof. Orawan Siriratpiriya, Thailand: In our project activities, the student exchanged for developing countries for studying their master or bachelor thesis. I think that, they can not achieve much more knowledge to become an expert by themselves. All of you are experts in the field of study, so the students can learn as well as possible from you instead of go abroad and look around. Moreover, we have paid much money for those activities.
 - Professor Takeshi FUJIWARA: One project's goal is focused mainly on research and education activities. At yesterday session, many bachelor and master students presented their researches, however some of them have relations to our researches and they have gone abroad for their study.
- ✓ Prof. Zhu Jianguo of Institute of Soil Science, Chinese Academy of Sciences: Asked about the future directions of the project for distributing the solutions of actual problems in Asia countries.
 - Professor Takeshi FUJIWARA: The future direction of the project is to become a training center including teaching and learning activities.
- ✓ Professor Mari MARUTANI of Guan University: Our project should focus more on the partner relationship among universities, government authorities, and private sectors among participant countries for sharing, contacting and solving current problems on waste management.

Finally, Prof. Hirofumi ABE, Dean of Graduate School of Environmental Studies, Okayama University, presented the closing remarks for this debrief meeting.

FY2010 Debrief Meeting on Education and Research

Programs of the Graduate School of Environmental Science

 **Okayama University**

Jan.24 (Mon.)

Place Graduate School of Natural Science
and Technology Bldg.

PROGRAM

10:00~12:30

- Special Lectures on
“Environmental Rehabilitation
in Asia”

14:00~17:00

- Debrief Session of the Project
Researches on “Environmental
Rehabilitation in Asia”

Jan.25 (Tue.)

Place Graduate School of Natural Science
and Technology Bldg.

PROGRAM

9:00~12:00

- International Symposium on
Environmental Science and
Technology 2011

13:20~17:00

- Debrief Session of “Practical
Research and Education of Solid
Waste Management Based on the
Partnerships among Universities
and Governments in Asia and
Pacific Countries” in FY2010



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