

N ewsletter



Global Center of Excellence (GCOE)
Kyoto University-University of Malaya



Kyoto University Global COE Program
Global Center for Education and Research on
Human Security Engineering for Asian Megacities



Special Coordination Funds for Promotion Science and Technology
Strategic Program for Fostering Environmental Leaders
International Center for Human Resource Development in
Environmental Management

Kyoto University
Graduate School of Engineering

JSPS-Asian Core Program (IWM)

JSPS-ACP (IWM) meeting with Japan coordinator; Prof. Yoshihisa Shimizu (sitting, second from right) and chaired by Prof. Dr. Nik Meriam Nik Sulaiman (sitting, third from right). Together with a visit from EML committee; Dr. Hidenori Harada (standing, second from left) and EML's doctoral student; Nurul Aini Kamaruddin (standing, end left) (Nov 21, 2011).



2011.12.

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Prof. Yoshihisa Shimizu (end right) and Dr. Nobumitsu Sakai (end left) visit to Faculty of Civil Engineering, MARA University of Technology (UiTM), Shah Alam (Nov 23, 2011).



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GCOE KU-UM is an international program under:



Report: The Role of Religious Communities in Enhancing the Adoption of Environmental Practices in Malaysia



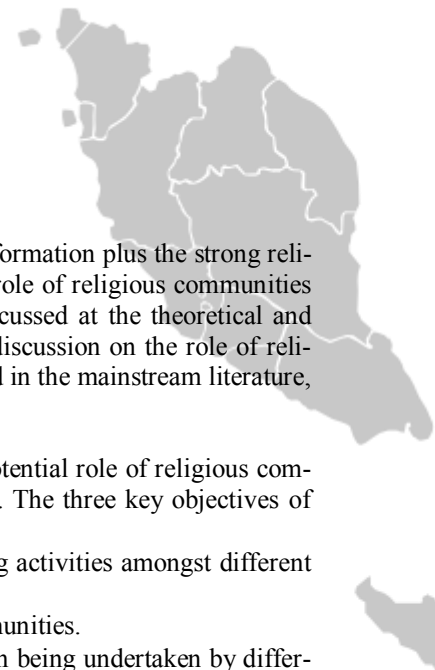
**Zeeda Fatimah Mohamed^{1abd*}, Noorshahzila Idris^{2a}, Azizan Baharuddin^{3acd},
Nik Meriam Nik Sulaiman^{4d} and Amran Muhammad^{5acd}**

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Optimism on the power of religion to create large-scale and deep-seated ecological transformation plus the strong religious socio-demographics of the country has encouraged policy ideas in enhancing the role of religious communities in the adoption of environmental practices in Malaysia. However, these are mostly discussed at the theoretical and conceptual level with little systematic empirical observation on the ground. Moreover, discussion on the role of religious communities in Municipal Solid Waste Management (MSWM) is extremely limited in the mainstream literature, with only a few exceptions.

This study is aimed at reducing this gap by providing early empirical evidence on the potential role of religious communities in enhancing public adoption of recycling as a form of environmental practice. The three key objectives of this study are:

- To examine the potential role of religious community in the adoption of recycling activities amongst different religions in Malaysia.
- To ascertain the key drivers or factors in recycling activities by the religious communities.
- To identify and document best practices of environmentally sustainable innovation being undertaken by different religious communities in Malaysia.

From a set of successful cases in Malaysia, we have observed that religious communities have the potential to play their role in recycling for several key reasons: the systematic way in which they operate, their ability to conduct long-term recycling programmes, the advantages of their institutional structure as an established platform for recycling activities, their multiple motivational drivers for recycling and their collective potential to expand their programmes to various parts of the broader community. The findings have also shown that the potential role of religious communities in environmental practices, such as recycling, has to go beyond general idealism on the positive influence of religious teaching for environmental protection - but due emphasis also needs to be in place to appreciate the unique socio-religious elements of each community and how it can be useful to support different aspects of the recycling programme. It is the latter that can provide more concrete explanations on why religious ideals can be translated into practical actions, and how they can be executed on the ground. From the research findings, one could begin to see that different institutional settings within each religion could provide different types of support and orientation to recycling programmes.

It is important to note, however, that the findings in this paper are based on a very limited number of cases, within the particular context of an urban community in Malaysia. Hence, the evidence in this research can only provide early insights on the role of religious communities in recycling. In order to ascertain whether this idea demands further policy attention, we are planning to extend in other contexts, covering more cases involving diverse institutional structures within each religion, be it houses of worship, NGOs, associations, foundations and even schools. At the moment, our research assistant, Miss Noorshahzila is conducting an in-depth research on the role of Muslim communities (especially focusing on the 'Mosque' as an organizational platform) in the adoption of 3R practices in the country.

Nonetheless, even with this limitation, we envisage that the evidence presented in this paper could provide useful empirical evidence for decision makers to begin thinking more tangibly about the role of religious communities in supporting the adoption of environmental practices such as recycling, particularly in countries where religion has strong influence on its social-cultural landscape and day-to-day activities of public life. For more information about the ideas and findings of this research we invite you to read the following journal articles, published recently in the 'Journal of Waste Management' and 'Resources, Conservation and Recycling':

- Zeeda, F.M., Norshahzila, I. and Azizan, B. (2011). Editorial: Religion and Waste. *Waste Management* 31 (9-10).
- Zeeda, F.M., Norshahzila, I., Azizan, B., Nik Meriam, N. S. and Amran, M. (2011, forthcoming). The Role of Religious Community in Recycling: Empirical Insights from Malaysia. *Resources, Conservation and Recycling*.

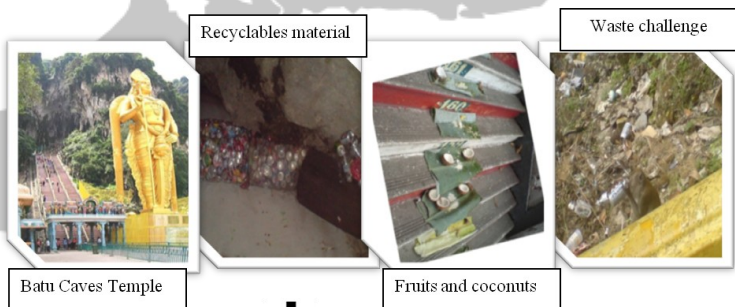
Finally, we would like to convey our sincere appreciation to our young research assistants, Miss Siti Maisarah (Islam), Miss Pei Sang (Buddhism), Miss Jing Xuan (Christianity) and Miss Nagaletchumy (Hinduism) for conducting preliminary work for this study and to the University of Malaya for providing the required financial assistance. For further information, visit our website at <http://cmsad.um.edu.my/index1.php?pfct=innovethics&modul=Research>.



Islam: Surau Al-Husna



Hinduism: The Batu Caves Temple



Christianity: Beautiful Gates Centre



Buddhism: Community of Tzu Chi Merit Association





Report: Study on dynamics of trace elements in Asian Megacities (particularly around the children's environment)



Prof. Minoru Yoneda
Supervisor
Laboratory of Environment Risk Analysis, Department of Environmental Engineering, Faculty of Engineering, Kyoto University, Japan



Dr. Maiko Ikegami
Laboratory of Environment Risk Analysis, Department of Environmental Engineering, Faculty of Engineering, Kyoto University, Japan

Research location: Kuala Lumpur and Terengganu, Malaysia
Research term: 2009-2011

Message from supervisor:

Dr. Ikegami's study is important for understanding the heavy metal risk level of living environment in each country of Asia. Her proposed method is very simple, cheap, and effective for clarifying the risk level. Her study results will be helpful for improving living environment especially for children and her method is expected to be used in many countries.

Research:

Children can be exposed to many chemicals from surrounding environment today, because these chemicals are used in various materials in living environment. It is possible that young children may ingest harmful materials by their hand-to-mouth behaviors. Exposure pathways of hazardous substances such as heavy metals and suspended particulate matter depend greatly on dietary habits, structure of cities and houses, and so on. Therefore, it is estimated that exposure to hazardous materials is considerably different from city to city. In this study, children's exposure to metals by contacting with various surfaces such as play sets, doors, floor, and so on was investigated, focusing on metals in their living environment. We conducted the wipe-off experiment on living environment and hands and fingers of children in some Asian cities whose life styles are different from each other. The investigated five cities are Kuala Lumpur, Kuala Terengganu, Bangkok, Manila, and Kyoto. In this research, we examined the amount of metals in soil, dust, paint of play sets that children may touch directly in a preschool of each city. We also conducted the investigation about quantity of metals on children's hands and fingers by wiping off those of children in these different cities. Here is a part of results of these investigations. In a preschool of one city, main components of soil were more attached to young children's hands than other preschools. From the viewpoint of the placement of play sets, in the playground of the preschool of this city, a large sandbox is arranged in the center and play sets are set up around the sandbox. It is thought that children in this school have many opportunities to touch soil and sand while playing, and therefore, that many soil particles were attached on their hands. In this study, it was found that the more heavy metals around children's living environment there are, the more heavy metal will be adhered to hands of children. We conducted the wipe-off experiment on living environment and hands and fingers of children in some cities whose life styles are different from each other. The results showed that various kinds of metals were attached to hands and fingers of children and their amounts were different from city to city. Furthermore, a large amount of metals which may be derived from soil was attached to hands of children who have many opportunities to touch soil directly. It was found that if there are heavy metals such as lead around their living environment, the amount of heavy metals adhere to their hands correspondingly. This study indicated that children's exposure to metals through contact is affected by their living environment such as play setting.





International Center for Human Resource Development in Environmental Management

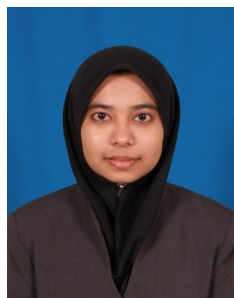
Environmental Management Leader Program

Report: Application of Remote Sensing to Identify Mangrove Forest Cover in Sabah, Malaysia



Prof. Shigeo Fujii
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Environmental Studies, Kyoto University,
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Ms. Nurul Aini Kamaruddin

*Doctoral candidate, Environment-friendly
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Graduate School of Global Environmental
Studies, Kyoto University, Japan*

Research location: Kota Kinabalu,
Sabah, Malaysia

Research term: 2010-2012

Message from supervisor:

Ms. Nurul Aini Kamaruddin obtained her Master Degree of Science in Universiti Malaysia Sabah under the supervision of Prof. Ann Anton, with whom I have had more than 10 years of experience on research and education collaboration. The most important project between us was the JSPS-VCC Core University Program between Kyoto University and Universiti Malaya during FY2000 – FY2009, but we also conducted other collaboration projects. Ms. Nurul was one of the members involved in one of such projects, and had a chance to come to my previous laboratory (Research Center for Environmental Quality Control, Kyoto University) in Otsu for internship study in 2 weeks in 2007, when she was a Master course student in UMS.

Since the JSPS-VCC program provided MEXT scholarships, I asked my Malaysian friends to recommend me excellent students who had intention to study in Japan. Ms. Nurul was such a student recommended by Prof. Anton. She came to Kyoto University as a research student, and then became a student in the doctoral course. I suggested her to study on mangrove issues as her dissertation topic. This topic is not easy to complete, but I expect her to conquer it with her highest efforts even if it takes time, which could result in strengthening research collaboration between us and Malaysian researchers.

Research:

Sabah state has the most extensive mangrove forest coverage of 59% (341,000 hectares) in Malaysia. The important uses of mangrove forest areas in Sabah are for forestry, fisheries and eco-tourism activities. However, the pressure of increasing population simultaneously with the expansion of agricultural land, aquaculture and urban development has caused destruction of a significant proportion of the Sabah's mangrove forest reserve (Jakobsen *et al.*, 2007; Polpanish 2008). Uncontrolled exploitation of mangrove forest has led to degradation of coastal environment such as coastal erosion, floods and wave action. Remote sensing could be a useful technique for monitoring changes in mangrove forest cover and to assess impacts of human activities on it over the past few decades. In this study we have used Landsat-TM images and the latest remote sensing techniques of image classification along with spectral analysis tools and GPS based field verification to examine mangrove forest cover change in Sabah. The main objective of this study is to develop a methodology for interpretation of LANDSAT-TM data using classification techniques for mangrove forest areas in Sabah.

K-Means classification (i.e., unsupervised) followed by the Maximum Likelihood classification (i.e., supervised) method are mainly employed. K-Means uses minimum distance between pixels to determine number of classes based on the user defined criteria. While the Maximum Likelihood assumes that statistically each class in each band follows normal distribution, then calculates the probability of the given pixel belonging to the specific class. As a summary, five broad land cover classes were identified which are water, forest, mangrove, and two unidentified vegetation types (Vegetation 1 & 2) (Table 1). Figure 1 shows the spectral patterns of mean reflectance in all classes. Mean spectral reflectance for water bodies show the lowest reflectance for infrared bands (4-7) in both of unsupervised and supervised techniques. Reflectance of the other identified classes with vegetation coverage resemble each other as indicated by the low reflectance at the red (band 3) and higher reflectance at infrared (band 4), but the magnitude of reflectance in band 4 are different. A spectral pattern with higher reflectance in band 4 was from forest areas and mangrove areas.. Vegetation 1 and Vegetation 2 have low reflectance for band 4 compared to mangrove and forest, so we assume it could be due to the effect of moisture such sea grass or floating algae.

This preliminary study has used LANDSAT-TM images to classify common land cover types in mangrove areas in the coastal part of Sabah, Malaysia. Unsupervised followed by supervised classification techniques were used to identify land cover classes. Similarity of spectral pattern of each land cover classes could be a good starting point for future assessment in mangrove areas. It was found that interpretation of vegetation classes (such as forest, mangrove and aquatic phytoplankton) and built-up area might require other image processing tools and field verification. A field survey was recently conducted in this study area. However, the results of this survey are still being analyzed. The conclusive results from this study will be used to further develop a methodology to estimate changes in mangrove coverage areas in the state of Sabah.

I would like to express my gratitude to the Environment Management Leadership (EML) Program in Kyoto University for offering me to join this beneficial program and subsequently providing fund during my long-term internship in Sabah, Malaysia. During the 2 month internship, I had the chance to visit several mangrove areas in Bagan Lalang, Selangor and also conducted my site survey in the mangrove area of Kota Kinabalu, Sabah, Malaysia. This internship also gave me the opportunity in experiencing and identifying current environmental problems in Asia especially in Malaysia affecting mangrove areas. In addition I would like to take this opportunity to thank my current supervisor Prof. Shigeo Fujii for kindly accepting me into the GSGES PhD program and recommending me for this EML internship Program. Besides that I would want to thank deeply my previous Msc. supervisor, Prof. Datin Dr. Ann Anton for having the faith in me recommending me to continue my PhD studies at Kyoto University. Thank you as well to Dr. Binaya Raj Shivakoti, currently attached to Institute Global Environmental Strategies (IGES) in Tokyo for his utmost kind support in my research.

Table 1 Land cover classes identified by supervised classification techniques and their coverage

No.	Class	No. of Pixel	Percent (%)
1	Forest	3,285,920	53.71
2	Water	1,670,467	27.31
3	Mangrove	860,201	14.06
4	Vegetation 2	265,327	4.34
5	Vegetation 1	35,165	0.58
	Total	6,117,080	100

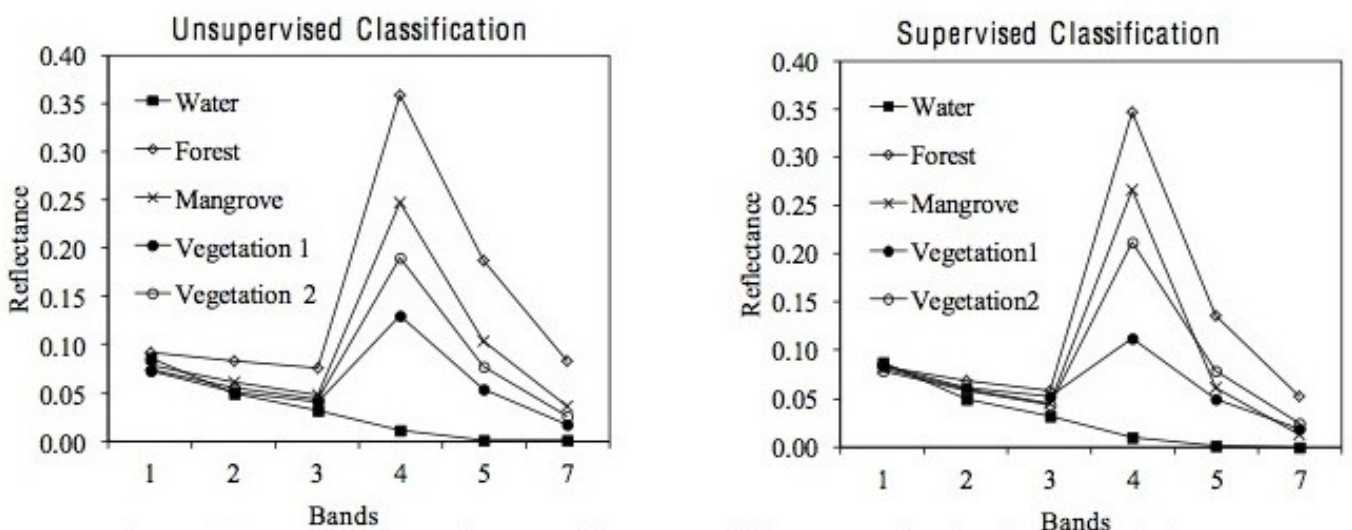


Figure 1 Spectral pattern of mean reflectance of all unsupervised and supervised classes

ACTION RESEARCH



Transitioning Low-Income Urban Communities towards Environmental Sustainability: An Action Research at Kondo Rakyat Community in Kuala Lumpur

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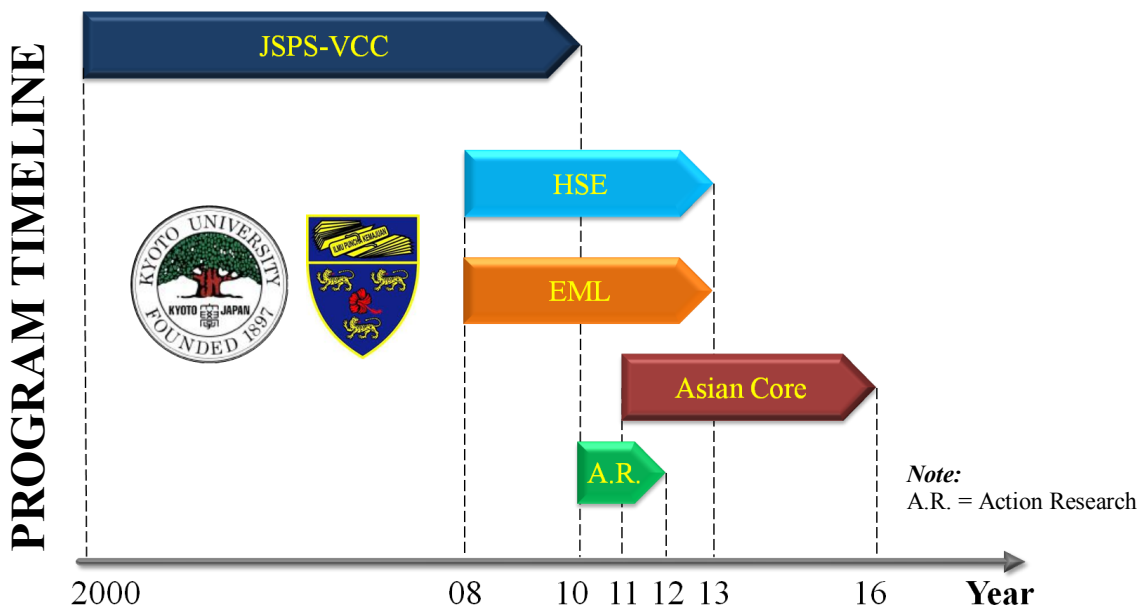


Noor Zalina Mahmood

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Project activities	Objective	Progress
Used Cooking Oil	To create awareness, provide facilities as well as mechanism for a systematic used-cooking oil collection. This oil can then be sold to generate side-income for the community. Mitigation of water pollution can also be addressed through this project	In the beginning, response from the community was a little bit slow, thus initiatives were made by the associates (TM, Unilever, UM, Kondo Rakyat) to induce the community in this project. These included giving monthly rewards for those who collect the highest amount of used cooking oil and also putting awareness posters in the area of Kondo Rakyat. These measures make the community started to realize the importance of used cooking oil. Until May 2011, nearly 60 kg of used cooking oil was collected. On 29 June 2011, five winners were announced to receive their rewards.
Kitchen Garden	To fully utilize empty lands in the Kondo Rakyat compound by planting various species of edible plants. These plants can be used personally by the community or can be sold at the Green Bazaar. The concept of '1 Rumah 1 Pokok' (1 Plant per Home) will also be introduced in the project.	One day of training and demonstration program was held on 7 th May 2011 at Kondo Rakyat. The professional trainers went there to help the community in making their own organic kitchen garden.
Composting	To train the community of Kondo Rakyat about composting techniques and to deliberate the possibility of establishing composting facilities in the Kondo Rakyat.	One day of training and demonstration program was held on 7 th May 2011 at Kondo Rakyat. The professional trainers went there to show to the community about the eco-enzyme and conventional composting. Eco-enzyme will take about 3 months to be done while composting requires only 1 month.
Green Bazaar	To set-up an iconic green bazaar for recyclables and environmentally friendly-based products at Kondo Rakyat. This project will encourage the practice of recycling and entrepreneurship activities amongst the Pantai Dalam community.	The first Kondo Rakyat Green Bazaar was held on 22 nd May 2011. It was concurrently done with other Kondo Rakyat activities were nearly 1500 visitors came and 95% of them visited this Green Bazaar. This program will be an annual event for Kondo Rakyat. The net profit from this Green Bazaar will be given to the Kondo Rakyat for their community needs. The first Green Bazaar were supported through a program called "From Community to Community". The second Green Bazaar was held on 3 rd December 2011.



Programs and its duration under international collaboration between Kyoto University and University of Malaya

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