GENDER HIGHLIGHTS

Gender Mainstreaming in Urban Environmental Management Projects: Lessons Learned from Southeast Asia Urban Environmental Management Applications (SEA-UEMA) Project

Edited by
Kyoko Kusakabe and Jubaiya Jahan

Canada

AIT Asian Institute of Technology

CIDA-AIT Partnership (2003-2010)
SEA-UEMA Project

Urban Environmental Management FoS
School of Environment, Resources and Development
Asian Institute of Technology, Thailand

Gender Mainstreaming in Urban Environmental Management Projects: Lessons Learned from Southeast Asia Urban Environmental Management Applications (SEA-UEMA) Project

Edited by
Kyoko Kusakabe and Jubaiya Jahan

ISBN: 978-974-8257-78-5

August 2010 (200 copies)

Published by
Southeast Asia Urban Environmental Management Applications (SEA-UEMA) Project
Urban Environmental Management Field of Study
School of Environment Resources and Development
Asian Institute of Technology
P. O. Box, Klong Luang
Pathumthani 12120, Thailand

Tel:+66-2-524 5777
Fax::+66-2-524 8338/6380

E-mail: uemapplications@ait.ac.th
Website: www.sea-uema.ait.ac.th

Text Layout: Jubaiya Jahan
Cover Design: Imtiaz Khan and Jubaiya Jahan

Gender Mainstreaming in Urban Environmental Management Projects: Lessons Learned from Southeast Asia Urban Environmental Management Applications (SEA-UEMA) Project

Edited by
KYOKO KUSAKABE and JUBAIYA JAHAN

2010

CIDA-AIT Partnership, SEA-UEMA Project
Asian Institute of Technology
Pathumthani, Thailand

Preface

This publication is a summary of learnings of the gender mainstreaming process under the Southeast Asia Urban Environmental Management Applications (SEA-UEMA) project, implemented by Asian Institute of Technology (AIT) and supported by the Canadian International Development Agency (CIDA). SEA-UEMA supported a number of community-based demonstration projects and action research and conducted capacity building and networking activities. This publication describes the gender mainstreaming strategies and processes that were implemented during the seven years of the project and analyzes the successes achieved and challenges faced. Collections of project descriptions and cases where our analysis and learning have been most evident are included. Although most projects attempted to integrate gender perspectives, the results varied. The cases that have been included here are those that had clear evidence of the application of gender analysis and outcomes regarding gender equality. We found it important to highlight the gendered outcomes from different projects, since often times gendered outcomes were not noticed even by the project implementers.

Our limitation is that we were not able to include those cases that did not report clear information or evidence on gender equality since we were not able to visit individual projects to extract achievements and data. We were unable to include achievements and challenges from graduate education and training workshops and networking activities because of limited data collection. But even with these limitations we expect that this small publication will be useful for those who are embarking on gender mainstreaming in general, and urban environmental management issues in particular, in the future.

We would like to acknowledge all the gender experts that contributed to the gender mainstreaming process in SEA-UEMA (Anny Andaryati, Vu Phuong Ly, Jawanit Kittitornkool, Fe Quanico Salcedo, Theonakhet Saphakdy, Napat Gordon, Ngo Thi Thuan, Tanaradee Khumya, Romyen Kosaikanont, Hor Sophea, Ouk Chansopheap, Kanjapat Korsieporn, Outhaki Khamphoui and Maureen Pagaduan) and all the project partners who have contributed to the learning. We would also like to thank Ms. Isabel Lloyd for reviewing the manuscript and her inputs to this publication. SEA-UEMA staff has helped us in contributing and collecting information. The help of

Ms. Farhana Khan Lima is especially acknowledged. Our appreciation also goes to CIDA for their generous support in implementing the whole project and enabling us to produce this publication.

The Editors
29 June 2010, Pathumthani

CONTENTS

SECTION I:

GENDER MAINSTREAMING IN URBAN ENVIRONMENTAL MANAGEMENT INSTITUTIONS AND ORGANIZATIONS: LEARNING FROM SEA-UEMA

KYOKO KUSAKABE AND JUBAIYA JAHAN

The Southeast Asia Urban Environmental Management Applications (SEA-UEMA) Project is a partnership project between Asian Institute of Technology (AIT) and the Canadian International Development Agency (CIDA). This was a seven year project which ran from 2003 to 2010. From the outset, SEA-UEMA was committed to have a strong focus on gender equality, and involved a gender specialist as one of the Project management team members. Even though there are many gender analysis frameworks and gender mainstreaming examples in rural development and agriculture development, there was little previous work done on gender analysis and gender mainstreaming efforts in urban environmental management, especially in Asia. Learning from experiences from other fields, SEA-UEMA followed a unique trajectory in gender mainstreaming initiatives. This paper outlines the gender mainstreaming efforts in SEA-UEMA and analyzes the factors that contributed to the successes and challenges that it faced.

1. Gender Mainstreaming Strategies of SEA-UEMA Project: An Overview

1.1 Gender strategy for SEA-UEMA

Gender mainstreaming in SEA-UEMA, as in many other projects, started with the development of a **gender strategy.** However, this did not initially prove to be effective because, at the initial stage of the project, each component was busy developing its own UEM activities, and had little time to stop and reflect on gender issues.

1.2 Gender information

Any gender mainstreaming strategy needs to be based on contextual knowledge. Since little gender analysis has been conducted on urban environmental management in Asia, a **gender situation analysis** was conducted in some of the cities of SEA-UEMA countries. The studies covered Bangkok, Thailand; Dili, Timor-Leste; Hanoi and Ho Chi Minh City, Vietnam; Metro Manila, Philippines; Penang, Malaysia; Phnom Penh, Cambodia; Surabaya and Yogyakarta, Indonesia; and Vientiane, Lao PDR. These studies enabled the project to highlight some of the major gender issues in UEM in Asia.

A **bibliography, identification of resources** and web-links were constructed to assist those people who would like to know more about gender in UEM and were made available on the website. In order to raise awareness of women's role in UEM, **bookmarks** featuring 23 cases of women working on UEM in SEA were developed. These

demonstrated the variety of roles that women take up in UEM: from household to community; from water and sanitation to solid waste management; and engagement as mothers and as community leaders, entrepreneurs and academics.

1.3 Gender training

For most of the SEA-UEMA partners, gender integration was a very new concept, therefore **gender training** was requested and conducted. **Workshops to provide a forum for gender experts** interested in working with urban environmental management were also organized. Since resources were limited for organization of stand-alone gender training, **gender sessions were included in all workshops and training programs** organized by SEA-UEMA to make the most of the opportunities to maximize knowledge on gender analysis.

However, recognizing that gender analysis skills and knowledge are difficult to inculcate within a few days, especially when the partners were new to gender concepts, there was a need to develop a gender analysis framework tailor-made to their needs and to the issue of urban environmental management in Asia. A **gender analysis framework for urban environmental management** was developed, discussed with country gender experts, and tested in one gender training session. The document, **Gender Equality in Urban Environmental Management A Casebook**[1]**,** was published to introduce this framework as well as case studies on UEM in Asia, allowing readers to practice using the framework in the case studies. This framework and the case studies were translated into local languages of SEA-UEMA countries and used in **national gender training** sessions which were conducted in local languages.

Recognizing that the SEA-UEMA project staff themselves needed to be well versed in gender concepts so that they could follow up with the partners and better support them technically, **internal gender training** programs were conducted. Again, with only one day or a few days training, it was impossible to develop the capacity of SEA-UEMA Project staff to a level where they could support the partners technically on gender integration. What came to be expected from staff was an ability to identify problems in gender-responsiveness in the project, and refer the case to gender experts for further follow up.

1.4 Technical support for partners[2]

A **gender checklist** was developed to help partners to identify gender issues but it proved difficult for partners (who have little knowledge and experience in gender analysis) to use the checklist effectively, so in order to have a mentoring support mechanism for the partners, **local gender experts** were assigned to each partner to provide on-site technical support when needed.

Since local gender experts are from outside of the partner's organization, communication was not always smooth, therefore **local gender coordinators** were assigned as a gender focal point in each partner's project. These local gender coordinators themselves do not have deep gender knowledge and skills but are people who are interested in working on gender issues and responsible for communication with country gender experts and to follow up on their advice.

The challenge that the partners encountered was not only to identify gender issues and come up with strategies to tackle these issues, but also to note the changes in gender roles and relations as a result of the project. In order to demonstrate achievements as well as challenges as a result of the project, **gender highlights** were written. Some of these are included in this publication.

In two partner organizations – one in Vietnam and the other in the Philippines - **gender audits** were conducted to review the organization's policies and practices from a gender perspective in order to provide better advice for gender integration in the future.

1.5 Gender integration in graduate education

One of the major components of the SEA-UEMA project is graduate education. All UEM-CIDA scholarship students were required to take at least one gender course and to integrate a gender perspective in their thesis analysis, thus a new course on **Gender Analysis in Urban Environmental Management** was created. In order to encourage students to take gender analysis seriously in their thesis work, a **gender thesis competition** was organized every year to select the thesis with the best gender integration in their thesis analysis.

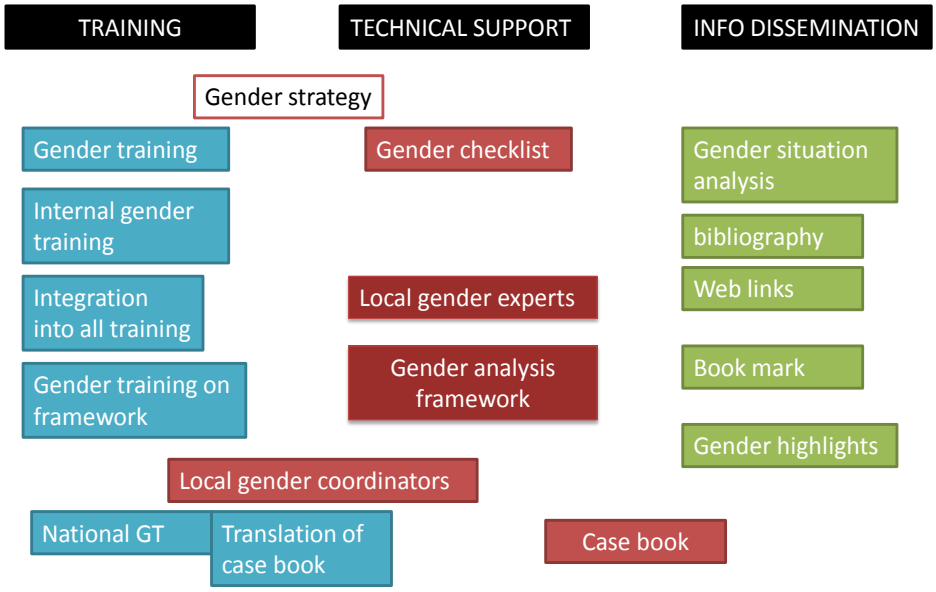


Figure 1: The summary of the gender mainstreaming strategies in SEA-UEMA project

2. Gender Integration Strategies Taken by Partners

How have all these efforts on gender mainstreaming in SEA-UEMA changed the way partners organize and implement their projects? There are various approaches and strategies that the partners took.

2.1 Gender awareness raising

A number of projects started with gender awareness raising. For example, one of the first ADPs "Decentralized sanitation for a cluster of households in Thongkhankham Neua Village, Vientiane, Lao PDR" and the "Community-Based Drainage and Sanitation for Parkhoiu Area and Houa Xieng Village, Luang Pravang, Lao PDR"[3], each organized workshops and meetings with village organizations and authorities on the importance of sanitation and gender equality. In the latter project, the awareness rais

ing sessions were followed up on by the Gender Experts who played a mentoring role for the Women's Union, which raised their awareness on environmental issues and women's participation in project management.

2.2 Improving access to water and sanitation and saving women's time

Some projects benefited women through **improved access to clean water**. For example, ADP "Community based integrated sanitation management in Vinh Quynh Commune, Thanh Tri District, Hanoi City, Vietnam"[4], as well as another ADP "Sustainable clean water facility in the community of Kotala, Timor-Leste"[5], not only ensured access to clean water for women and men, but also were able to **save women's time** to collect and filter water by providing water filtration systems. The same access to clean water and time saving effects were seen in ADP "Community managed safe drinking water supply project in Khan Dangkhor, Phnom Penh, Cambodia"[6], "Improvement of clean water delivery in Phuoc Kien Commune, Nha Be District, Ho Chi Minh City, Vietnam" and "Clean water supply management in a low income settlements in Cokrodiningratan Village Yogyakarta Municipality, Indonesia", which provided piped water to households. JAR project "Wastewater Management in the Bangkok Metropolitan Region : A Search for Public Policy and Action Program to Improve the Local Environment"[7], identified that women are more keen to have clean water access than men, and are more willing to pay for water than men.

Some other projects aimed to benefit women through **improved sanitation**. In ADP "Demonstrating community based environmental sanitation: working with milk cow rearing communities in Ho Chi Minh City, Vietnam", women were seen to be the caretaker of livestock and thus more exposed to animal waste and the insects and vermin that go with it than men. This project introduced a system to convert animal waste into renewable energy, thereby improving hygiene and sanitation conditions. Not only did they get free bio-gas through the system, but the reduction in the volume of animal waste lowered the number of insects and mosquitoes in the household periphery and minimized the risk of contracting diseases from unsanitary environmental conditions. ADP "Decreasing river pollution along the edge of the Code river of Yogyakarta, Indonesia", provided seven public toilets and three community based water treatment facilities which reduced incidence of diseases in the community and at the same time reduced women's work load. Similar provision of sanitation facilities were also seen in the ADP "Decentralized sanitation for a cluster of households in Thongkhankham Neua Village, Vientiane, Lao PDR". This project improved the

waste water treatment and drainage system in the community. As a result of the project; waste water, bad smell and flooding conditions of the locality have improved.

Some other projects helped women through reduced solid waste. ADP "Clean and green program: Community-based urban agriculture and solid waste management in Hanoi, Vietnam", introduced a solid waste management and composting facility which reduced odor and reduced the solid waste management burden on women. JAR project "Micro-vendors association's leadership in the development of a solid waste management system in Daem Khor Market, Phnom Penh, Cambodia: a process documentation"[8], helped women micro-vendors to reduce solid waste in the public market.

2.3 Cleaner air for women and men

Some projects tried to achieve **cleaner air.** In some cases, women are adversely affected by air pollution because of their gender roles. For example, in ADP "Solution to reducing environmental pollution in a traditionally manufacturing village in Hanoi City, Vietnam", village women workers were exposed to coal burning because women were mainly in charge of the pottery kiln operation. The project installed gas fire technology instead of coal burning which reduced carbon emission and reduced women's working time from 10 to 8 hours.

Similarly another ADP, "Reduction of air pollution from open burning of solid waste in a solid waste scavenging community in Hanoi, Vietnam"[9] not only reduced air pollution, but also reduced the workload of women sanitation workers by improving the way people dump their waste. JAR "Indoor air pollution as a reflection of gender and poverty issue: a study on women, health, behavior pattern and Kitchen in Phnom Penh"[10], helped install improved stoves that reduce smoke during cooking. ADP "Cleaner technology for reduction of air pollution from small scale glass recycling industry in Ho Chi Minh City, Vietnam" secured employment for women and men by introducing an air treatment system in the glass recycling industry. The factory had been closed down due to lack of air treatment system and, as a result, the workers in the factory became jobless. Women were the hardest hit since they do not have alternative skills and cannot go far away from home to look for jobs because of their reproductive responsibilities. The project not only improved the environment but also secured employment for women.

2.4 Creating income and employment for women

As in the above case of ADP "Cleaner technology for reduction of air pollution from small scale glass recycling industry in Ho Chi Minh City, Vietnam", some projects increased or secured employment and income for women, which is an important achievement because women are often the managers of the household finances. ADP "Sustainable rice-straw management for urban air pollution control in Bang Bua Thong, Nonthaburi Province, Thailand", trained the housewives' groups to cultivate mushrooms using rice straw waste instead of burning it and, as a result, improved the air quality in the area and generated income for the group. Another ADP "Community based solid waste collection in Bangplee New Town Community, Samut Prakan, Thailand"[11], introduced income generating activities for community women through earth warm composting and waste merchandizing. Similarly, ADP "Decentralized integrated environmental management in Tsunami Affected Area in Baan Nam Khem Pattana Community, Phang Nga Province, Thailand" employed women in a garbage bank. Similarly another ADP "Community based solid waste collection, Bangplee New Town community, Samut Prakarn, Thailand"[12], employed ten women in project management, waste collection, waste separation, waste composting and accounting.

2.5 Separate meetings for women

Some projects pointed out that they organized separate meetings for women to enable them to participate better in discussion. JAR project "Developing water and sanitation basic service discourse in Bandung City, West Java, Indonesia", organized regular informal women-only meetings. It was observed that women became more confident after attending two or three sessions, and became very active in writing bulletins, doing mapping as well as demonstrating critical thinking and actively participating in planning.

2.6 Improving knowledge of women

Women in Southeast Asia are active in project implementation, but still lag behind men in terms of access to knowledge, thus improvement of the knowledge of women on urban environment is an important focus in SEA-UEMA. For example, ADP "Community rainwater harvesting in Budlaan II Amazing Gawad Kalinga Village, Cebu City, Philippines" taught women how to construct the rainwater harvesting system.

Some ADPs especially focused on providing **technical knowledge** to women. Again, this is to overcome the gender stereotype that technical things are the preserve of men. For example, in the ADP project "Reduction of Air Pollution from Open Burning of Solid Waste Scavenging Community in Hanoi, Vietnam"[13], women learned to operate a combustion device. In ADP "Provision of Community Based Bio-sand Filter as Household Water Treatment to provide Access to Water Supply in Poor Urban Settlement in Bali and Eastern Indonesia", women were trained on the operation and maintenance of the bio-sand filter. ADP "Decentralized Integrated Environmental Management in Tsunami Affected Area in Baan Nam Khem Pattana Community, Phang Nga Province, Thailand" mobilized women's groups in training and workshops to construct waste water catchments and drainage systems.

2.7. Women in management and strengthening women's groups

Noting that women tend to play fewer leadership roles, some projects focused on improving women's role in management and leadership. For example, ADP "Community Based Integrated Sanitation Management in Vinh Quynh Commune, Thanh District, Hanoi City, Vietnam"[14], ensured equal representation of women in the project management committee, and ADP "Integrated Air Pollution and Solid Waste Reduction for the Small Scale Plastic Recycling Industry in Ho Chi Minh City, Vietnam"[15], encouraged a greater role for women in the environmental management of the community.

Some projects worked to strengthen women's groups as a means of strengthening women's participation in the whole cycle of the project. For example, in ADP "Integrated Air Pollution and Solid Waste Reduction for the Small Scale Plastic Recycling Industry in Ho Chi Minh City, Vietnam"[16], and ADP "Reduction of Air Pollution from Open Burning of Solid Waste in a Solid Waste Scavenging Community, Hanoi, Vietnam"[17], changed the traditional view of the Women's Union and promoted women's leadership in urban environmental management.

Another example of strengthened women's groups can be seen in JAR project "Micro -vendors Association's Leadership in the Development of a Solid Waste Management System in Daem Kor Market, Phnom Penh, Cambodia: a Process Documentation"[18]. This project strengthened the visibility and negotiation power of micro-vendors associations through their increased involvement in managing solid waste management of the market.

2.8. Men in reproductive work

Noting the time constraint for women in taking part in community activities, some projects encouraged men to take up reproductive work. For example, ADP "Sustainable Community Based Sanitation Improvement and Small Scale Clean Water System Initiative in Citarum Riverside Settlement, Cilebak, Bandung, West Java, Indonesia", found inequality in the workloads of female and male members in most sanitation related work, such as in fetching water, therefore the project involved male members in these reproductive activities. Better access to clean water and men's involvement in reproductive work decreased women's workload and time spent for activities related to clean water supply and sanitation, leaving more time to spend for productive activities to help family survival and/or for their own pastimes. More women took up part time in nearby factories. Men's involvement in reproductive work also reduced the burden of school girls who now get more time for socialization and for study. Similarly, in JAR project "Strategic planning of an Integrated Solid Waste Management of a Medium Scale Municipality in Thailand" women's workload in solid waste management activities was eased through men's participation. In JAR project "Indoor Air Pollution as a Reflection of Gender and Poverty Issue: A Study on Women, Health, Behavioral Pattern and Kitchen in Phnom Penh, Cambodia"[19], through introduction of improved stoves, the project raised consciousness of male members in the community about women's workload, and as a result men started to help in cooking. In the Pilot Project "Collecting Boat People's Human Excreta and Environment Education in Hue City, Vietnam"[20], the lack of a toilet facility was the main problem of the boat people. The project arranged portable toilet facilities for these boat people. At first, the men refused to clean the toilets, saying that dirty work should be done by women. Nevertheless the project achieved a change in the mental attitude of men and motivated them to share toilet cleaning activities equally.

2.9. Improving security

Some projects focused on security issues for women. JAR project "Exploring community and scavenger partnership in Solid Waste Management"[21], women and elders were mostly responsible for collecting solid waste from the households and transporting it to the temporary dump sites. The community people often lost household things which made women felt unsafe since scavengers from outside communities were coming to collect waste. The project introduced a community-scavenger partnership in solid waste management system, which reduced women's sense of inse curity through registering scavengers coming and working in the community. They

have also developed positive thinking towards scavengers as a group of people keeping their environment clean and secured the neighborhood from irresponsible scavengers.

2.10 Gender-responsive publication

Some projects produced gender-sensitive manuals and materials on UEM. For example; in the Pilot project "Operationalizing the LGU-Junkshop Partnership in Support to the Cluster Materials Recovery and Composting Facilities Project ", the Local Government Unit (LGU) and Association of Junkshop Operators jointly developed a Manual of Operations Cluster 3 Materials Recovery Facility Project, in which they prohibit pregnant and lactating staff to be assigned to hazardous waste collection sites and emphasized the need to include gender sensitivity in the orientation of their staff.

3. How Did It Work?

The level of gender integration in projects is uneven, but there are some common steps that the partners followed in the process of integrating gender perspectives in their projects. As a starting point, SEA-UEMA emphasized supporting the partners to identify gender issues in their project area. The gender analysis framework as well as gender training was centered on the identification of issues. Initially partners were unable to perceive problems in terms of gender since the gender division of labor and gendered practices were taken for granted.

Secondly, the **gender division of labor** was emphasized as it is relatively easy to identify, and non-threatening to most people. In the context of Southeast Asia, challenging the gender division of labor was not sensitive and was a concrete factor that the partners were able to identify and work on.

Thirdly, there was increasing **consciousness about involving women** in all aspects of the project. How much has been concretely achieved is still questionable, but awareness was raised to a certain extent.

Fourthly, **many aspects of main UEM themes are in themselves a practical gender needs (PGN) issue for women**, thus by dealing with certain UEM issues, projects were able to claim that they met women's gender needs. For example, providing safe drinking water is women's PGN, since it is usually women who need to ensure that family members have access to clean drinking water, and since they are the family

cook. As women tend to look after the sick, improvement in the health situation through access to safe drinking water is women's PGN. The same goes for solid waste management as well as the introduction of smoke-free cooking stoves.

4. Why Did It Work?

Again, although there is wide difference in the level of gender integration in project activities, some factors that lead to better outcomes can be identified. The most important factor is the **commitment of the implementer**. One of the most successful gender integration cases was the ADP "Community Composting for Taman Duku Residential Area, Kg Seronok, Juru, Penang, Malaysia"[22]. The project implementer attended one of the earlier gender training sessions at AIT, and utilized the knowledge to actually conduct a gender analysis in his own project, and highlighted and encouraged women's leadership roles in the project. A similar response was seen in "Sustainable Community Based Sanitation Improvement and Small Scale Clean Water System Initiative in Citarum Riverside Settlement, Cilebak, Bandung, West Java, Indonesia". Both of these projects not only achieved good gender outcomes but also had a good achievement level overall. These organizations are learning organizations and embrace, absorb and try out new knowledge and skills to constantly improve their performance. Good projects are often more open to gender integration, and also, through trying to integrate gender, projects can train and transform themselves into more open and learning organizations, leading to better results overall.

A second factor is **participatory and process orientation**. One of the reasons why it was difficult to integrate gender into UEM projects was because many UEM projects focused only on the technological aspect of management. Initially, when the project, "Constructed Wetland System for Treatment of Waste Water from Fermented Fish Production, Ban Sang, Phayao, Thailand" started as ADP, it was difficult to integrate gender, since the project was defined as a technology project. However, when this project continued as a Flagship Project, the participatory component was strengthened, and hence it was possible to discuss gender integration in the design and implementation of the project.

A third factor is a **mentoring mechanism**. Initially, technical support on gender was centralized. However, this proved to be inefficient, since SEA-UEMA was not able to attend to all the varying needs in various contexts at the time it was needed. The appointment of local gender experts created a mentoring mechanism where partners

were able to access their services when needed. For example, the gender expert in Laos was always available for consultation and the partner and the expert had frequent telephone conversations to make sure that gender issues was taken seriously throughout the project.

5. Has SEA-UEMA Project been Gender Mainstreamed?

Even though there have been some changes among the partners' projects, can we say that SEA-UEMA was able to mainstream gender into its operations? To answer this question we need to go back to review the definition of gender mainstreaming. The Economic and Social Council of the UN agreed conclusions 1997/2 defines gender mainstreaming as:

> "The process of assessing the implications for women and men of any planned action, including legislation, policies or programmes in all areas and at all levels. It is a strategy for making women's as well as men's concerns and experiences an integral dimension of the design, implementation, monitoring and evaluation of policies and programmes in all political, economic and societal spheres so that women and men benefit equally and inequality is not perpetuated. The ultimate goal is to achieve gender equality."

The essence of gender mainstreaming is to sustain the effort to work towards gender equality, which necessitates the transformation in organizational policies and setup, as well as the organizational members' mindset and routine work practices. It is a political process that requires commitments to the goal of gender equality.

Integrating gender perspectives in projects is not the equivalent of gender mainstreaming even though it is an important part of the whole effort towards that goal. Integrating gender perspectives allows one to analyze the field or communities and to change the design of the project, while causing the planner/ implementer/ manager to review their own biases and practices with a critical eye. Integrating gender perspectives in projects provides opportunities to improve the situation of women and men in the project sites and that is in itself important. In order to sustain the gender-sensitive intervention and to evolve the project towards achieving gender equality, we need to change the way we and our organization work. Such change in organizational practice does not automatically follow some small field-level intervention. It needs conscious effort and commitment to sustain the gender-responsiveness in the projects. If we try to answer the following questions, the limitation in gender mainstreaming in

UEM is obvious: has the heavy technical orientation of UEM changed through this project? Have we been able to enlarge the focus of action in UEM that would change the priority and values of the current ways of doing things and to transform the gen der relations and hierarchies? Have we been able to overcome the lip service given to gender equality inside the project and brought about change in the way we work?

There are several reasons why we were not able to take such a transformative approach and to make certain impacts. One of the reasons is because of the limitation of community-based interventions with linkages to other sectors in society. Small community-based projects have difficulty in becoming visible or in making large impacts in society and can limit the scope of women's participation and empowerment if not linked to the wider society and economy. For example, how much employment creation or political empowerment can we achieve by promoting women's employment and women's participation inside the community? This approach might even perpetuate low pay employment for women. Even though community-based intervention is important to ensure that the benefits go to targeted women and men, a stand-alone community project can be isolated and of limited scope in terms of change and influence.

A second reason is the technical orientation of UEM, which tends to underemphasize organization and negotiation, institutional analysis and process orientation. As discussed earlier, a participatory approach is a pre-requisite for any gender intervention to be fruitful.

A third reason is the heavy dependence on personal commitment. Perhaps as a result of the proliferation of gender terms and wider access to gender discourses, there are those who are able to provide lip service and appear to embrace gender equality and have the language skills to get away without scrutiny. It is ironic that feminist efforts to mainstream gender discourses end up teaching terminology that can be used to stifle any substantial change in achieving gender equality.

6. Way Forward

To overcome the limitation of community-based interventions and internal resistance to gender mainstreaming, effective networking is important. As Standing (2004:86)[23] noted:

> [Gender] Advocates have to both render their arguments meaningful to an un -gendered audience and do so in a way that makes the arguments more likely to be accepted and acted upon. As Razavi points out, this kind of internal advocacy within institutions is again not an inherently transformative project. It only becomes so when those outside the institution- activists and researchers – can connect it to the political world and to pressures for change.

The SEA-UEMA project, in its closing workshop, focused discussion on networking and institution building. This has been a missing link, not only for UEM but for gender mainstreaming in general.

Endnotes

1. Kusakabe, Kyoko. and N, Veena. (2008), Gender Equality in Urban Environmental Management A Casebook, CIDA AIT Partnership, SEA-UEMA Project, Asian Institute of Technology, Pathumthani, Thailand
2. In this paper, implementers of Alumni Demonstration Projects (ADP), Joint Action Research (JAR) Projects, Pilot Projects, Flagship Projects, Policy Advocacy are all called "partners", and their implementing activities as "partner's project" to distinguish from SEA-UEMA project itself.
3. See II.10 in this book.
4. See II.1 in this book.
5. See II.3 in this book.
6. See II.2 in this book
7. See II.14 in this book.
8. See II.16 in this book.
9. See II.8 in this book.
10. See II.13 in this book.
11. See II.7 in this book.
12. See II.7 in this book.
13. See II.8 in this book.
14. See II.1 in this book.
15. See II.6 in this book.
16. See II.6 in this book.
17. See II.8 in this book.
18. See II.16 in this book.
19. See II.13 in this book.
20. See II.9 in this book.
21. See II.11 in this book.
22. See II.5 in this book.
23. Standing, H (2004) "Gender, myth and fable: The perils of mainstreaming in sector bureaucracies", *IDS Bulletin*, 35:4, 82-88.

SECTION II:

GENDER HIGHLIGHTS: CASE EXAMPLES OF INTEGRATION OF GENDER PERSPECTIVES IN UEM PROJECTS UNDER SEA-UEMA

Community Based Integrated Sanitation Management, Vinh Quynh Commune, Thanh Tri District, Hanoi City, Vietnam

Implementer: Duong Hieu Minh

The project, which was implemented from October 2004 to December 2005, had two components. The first was to set up a water filtration system and the second to establish a solid waste management system. It benefited a total of 288 households and addressed the needs for access to clean water in the community.

Figure 2 : Women Participating on Solid Waste Collection and Transportation to Dumping Site

Figure 3 : Construction of Soil Conditioning Plant

First, the project ensured that women's concerns were heard and addressed from project planning up to the implementation of the project. This was done through the involvement of the local women's union throughout the entire project cycle, beginning from the orientation, training and workshop, where 45 per cent of the attendees were women, and the equal representation of men and women in the project's management team, where three out of the seven team members were women. During its implementation, the project employed women in the construction of the water supply and composting plant. Among a total of 15 workers, 3 women were involved in construction activities.

As a result, the project was able to improve access to clean water and the water filtration component of the project reduced the number of hours that women in Than Tri District had to spend filtering water for cooking and drinking so that women in the community had more time for other activities.

Written by: Duong Hieu Minh and Nir Prasad Dahal

Community Managed Safe Drinking Water Supply Project, Khan Dangkhor, Phnom Penh, Cambodia.

Implementer: Abdul Rashid Khatri
Gender Expert: Hor Sophea

The project demonstrated the successful design and implementation of a community managed and financed water supply system. Water supply was a great problem in this community especially in the dry season. According to the survey, 96% of the people had to depend either fully or partially on a private vendor in the dry season. On an average each family had to spend an hour every day to collect water from a long distance. Water transportation is mainly done by men (80.3%) over four times higher than by women (18.4%). However, women of this village were experiencing several problems due to water scarcity. Women used to carry the water on their head and shoulders. Women had to spend several hours on water management related matters in addition to their reproductive responsibilities. Another big problem is the lack of reservoirs for water storage. Education of girls was affected since it took time for them to wash clothes and to bathe in a distant ponds and rivers.

Figure 4: This pipe is Connecting Water from the Project

Figure 5 : This Pipe is Connecting Water from the Project

To fetch water from the pond, which is 1.5km from the village it required at least three people to transport water (one to ride the cart and other two to push the cart). After the construction of the community water treatment plant by the project, the distance was reduced to only 200 meters, and one person can now carry water in half an hour. The project was able to reduce the cost of water in the community from US$2.35 (10,000 riel) per cubic meter (price of water from private vendor) to US$ .94 (4,000 riel) per cubic meter (charge to get water from community water treatment plant). Easy access to water relieved tensions inside the family which had often occurred because of scarcity of water.

Women of the village were consulted and discussed setting up the modalities of the project (i.e., fixing cost of water, management, etc.), design and location of the plant (i.e., tanks, etc.). Women were highly encouraged to participate in the management committee of the project. Of seven members of the management team, three were women. In community meetings the attendance of women was high but active participation remained low because the project was mainly a technical project, therefore, women and men thought men should participate due to the traditional thinking that technical work is men's work.

In the first phase of this project women's representation was very low in the technical side. To motivate women to take part in technical activities the project engaged a woman engineer to assist in the training of water quality testing and understanding of how the technology works. During the second phase of the project, women participated in on-the-job training on operation and maintenance. Women's representation in other technical activities also improved during the second phase. For example, there was no woman during the first phase in the Jar test (Jar test is a test which is done to determine optimum coagulant and coagulant aid dosages), while women were involved in the second phase of the Jar test.

Written by: Abdul Rashid Khatri and Jubaiya Jahan

Sustainable Clean Water Facility in the Community of Kotalala, Timor-Leste.

Implementer: Timor Aid (project leader : Salomao Fraga Fernandes)

Figure 6 : This Tank is Filtering Water

Figure 7 : Public Stand Pipe

The project established a community-based water supply system in Kotalala, a village in Timor Leste. The water supply system effectively increased the village residents' access to clean drinking water and improved the community's overall hygiene and environmental health conditions.

Prior to project implementation, Kotalala residents had to walk more than one hour to fetch water from the river. The river often went dry and the water was dirty. The untreated water supply often caused water-borne diseases such as diarrhea that affected children in the community.

Since women and children were responsible for fetching water, they were burdened with the task of providing clean water to the households. Women were further weighed down every time a child got sick because of the untreated water. The project tried to address these problems by installing a water filtration system tank, constructing two public water distribution tank and two public standpipes. With the project,

women do not need to go to river to collect water. They can collect the water from community standpipes which reduces their work load and saves time for collecting water. Now they can collect water within ten minutes from community stand pipes.

From the survey, it is found that access to potable water supply also reduced the incidence of water-borne diseases and effectively reduced the stress that women had to endure when taking care of sick family members.

As well as these practical gender needs, the project addressed some strategic gender needs by involving both men and women in project planning. Aitahan, the women's group in the community, was mobilized to encourage more women to participate in project planning and discussions. Eight women assisted their male colleagues in site clearing and construction tasks and there were two women among ten members of the water management group. Through the participation in the project, many of the women increased their confidence in decision making and speaking in public. For example, in January 2007, the women persuaded the community to speed up the construction of edges around the tanks in order to protect the tank from livestock.

Written by: Salomao Fraga Fernandes and Nir Prasad Dahal

Integrated Environmental Management of a Typical Low Income Community, Nong Daung Thong, Vientiane, Lao PDR

Implementer: Public Works and Transport Institute (PTI), Lao PDR (Project Leader: Phouthala Souksakhone)
Gender Expert: Outhaki Khamphoui

Figure 8 : A Women Collecting Garbage

Figure 9 : Women are Attending a Special Meeting

This project demonstrated how a community can successfully set up and manage an integrated sanitation, drainage, water supply and solid waste management system. It was implemented in a village in Sikhottabong district, Vientiane, Lao PDR. The project covered 70 households and concentrated on the low-income settlements of the village.

Prior to the implementation of integrated system, the people in the project site suffered from various environmental problems associated with poor drainage, inadequate and unsanitary toilet facilities, lack of water supply and improper disposal of solid waste. These issues caused serious problems such as the accumulation of wastewater from toilets and drains in a nearby pond that quickly resulted in foul odor and be-

came the breeding ground of mosquitoes that could be carriers of dengue fever. Women, children and elderly people were most affected by the bad environmental situation because they had to spend more time within the village whereas the men spent most of their days in the workplaces.

The project improved the situation by constructing a community toilet, drainage system, solid waste collection and management system and a potable water supply for the community. The project constructed 204 meters main drainage along the main road with 302 meters sub-drainage along the tracks. The project also constructed three community toilet buildings in three locations. Each community toilet building has two separated latrine rooms for men and women and a separate washing room for men and women. A connection of water supply from the main pipe was provided, which was further extended to community toilet buildings in 3 locations and to 32 households. Plastic bins were provided to seventy eight (78) households. The project also trained the community people to do waste collection, separation and selling. Furthermore, the project also advised to set up a recyclable bank under the leadership of the community environment unit (CEU).

By constructing the toilet facilities and drainage system and by introducing a solid waste management system, there was no stagnant waste water. As a result, the breeding ground for mosquitoes has been eliminated and the risk of dengue fever and water -borne diseases was effectively lowered. Improvement of sanitation led to an improved health situation which reduced women's workload in taking care of sick people. This also reduced health expenditures which made it easier for women to manage the family budget.

The project also improved access to clean water in households and reduced the amount of time and money previously spent to fetch clean water for household use. Earlier it cost each household US$24 per month to purchase water for their household consumption; after the project intervention, the cost is US$1 per month.

Recognizing the low participation of women in community decision making, the project encouraged women to participate from the beginning, As a result, on average, 47 per cent of participants for each project activity were women. Furthermore, separate meetings were organized specifically to generate feedback from women community members. Project implementers made sure that the time and venue of the meetings were convenient for the women to encourage attendance and participation. Women's

opinions were taken seriously and integrated in the project implementation. For example, community women suggested placing a concrete cover on the main drainage so that children would not fall down into the hole. They also suggested the provision of community plastic bins at three different points of the community. All suggestions were implemented.

Representatives from the Lao Women's Union were involved in the project planning while the technical team was composed of two men and two women. Since one of the objectives of the project was to ensure women's participation in project activities and to promote gender equality in the project area, it also provided gender sensitization training for community members to increase awareness on the role of both men and women in the management of environmental resources.

Written by: Phouthala Souksakhone and Nir Prasad Dahal

Community Composting for Taman Duku Residential Area, Kg Seronok, Juru, Penang, Malaysia

Implementer: Socio Economic and Environmental Research Institute (SERI) (Project Leader : Khor Hung Teik)

Taman Duku is a housing estate built in 1998 located in the Middle District in the State of Penang, Peninsular Malaysia. It is about 15 mins from the Penang Bridge on the mainland. The residential area is about 20 acres and consists mainly of middle-income residents. The strength of this group lies in the cohesive social structure and cooperation of the community. The residential area is served by the Seberang Perai Municipal Council, which provides them rubbish collection services through an appointed waste collection company every alternate day. Each house has a rubbish bin into which daily garbage is thrown. The community has been practicing recycling for about 3-4 years and has a separate shed for the deposit of recyclable items beside their community hall. They have also been practicing an adhoc form of community composting prior to the project start. This composting project is to complement the recycling project as 40-60% of waste generated in Taman Duku is organic in nature.

Figure 10 : Community People are Attending a Training on Composting

Figure 11: A Woman Providing Waste for Composting

Prior to the project implementation a preliminary survey was conducted to look at the cooking habit and gender division of labor of the community. It has been found from the survey that 67% of the households cook their own food, 1% caters food from outside and 32% eat out. Thus, participation for the community-composting project can be expected from around 68% (cook and cater food) of the residents as those who eat out will have little compostable waste. The survey result also showed that in this Taman Duku community 76% of the women cook followed by 16% of households where both women and men cook. In 8 percent of the cases men cook for the households. The survey findings illustrated that mainly women (66%) do the shopping followed by household. where both the men and women do the shopping (20%), whereas 14% of households replied that men do the shopping. The survey also showed that it is the wife who takes out the garbage (48%), while in 17% of the households husbands take the garbage out, followed by children (11%), and only 6% of cases mentioned that the maid takes out the garbage. Among the respondents, 10% are single, and they take out the garbage themselves.

From the survey result it was discovered that it is the woman who performs un-paid household chores at home including waste management in the Taman Duku residential area. That is why the project mainly engaged women to separate and save the organic waste for the composting shed instead of throwing it out into the rubbish bins while they prepare their food. Men were also encouraged to participate in waste management, since they too have a part to play in separation of organic waste from the recyclables in order not to overburden women with all reproductive work responsibilities.

It was also observed that women often take their children for evening strolls to the manmade pond just adjacent to the composting shed in Taman Duku. As a result, the community leaders opined that the renovation of the landscape in the adjacent community pond into a recreational area would facilitate families; especially women to bring their children out for evening walk as well as to drop their food waste at the composting shed. The Municipal Council provided a small plastic pail with a lid to each household to carry the organic waste to the composting shed. It was realised by the project that the new plastic containers for kitchen waste makes it easier and more convenient for women to drop off the kitchen waste at the shed. The participation rate of the Community Composting project had risen to over 30% from a mere 5-10% since the project's inception.

This composting project is beneficial for the community in that the organic waste is being composted into fertilizer that would otherwise have been discarded. It removed the odor which used to spread out from the common garbage bin. The community people reported less evidence of vermin and pests such as cockroaches, flies, and rats around their houses now. Dogs and cats have stopped rummaging through garbage bins, as there is no longer any food waste. The garbage collection contractor is now sending in smaller trucks to collect garbage in the area, as there is now less to collect.

In order to increase the participation of households, women who were already taking part in the project were involved in promoting the concept to non-participating households and to weld their influence on other women in the community to show case the benefits of composting. In the project, men did the manual jobs at the composting shed such as receiving the kitchen waste, weighing and mixing the waste and follow the compost piles throughout the composting process. In the project, the man who was engaged for mixing the compost daily was getting RM 400 per month as wage, all other men and women were voluntary workers. The organic waste was used by the community free of change for landscaping and vegetable gardening around the recreation pond where the composting plant stood.

The Residents' Association consists of 4 women and 12 men. Among the 4 women Mdm. Cecilia Wong was the project leader plus the Chairperson of LA 21 (Local Agenda 21) Composting Committee, Mdm. Ng Siew Lai, patron and Member of Parliament of the area who officiated some ground activities of the project; Ms. Norzila Hossain was the main trainer from the agricultural department and Ms. Loh Poh Chen was the leader and ground champion in replication project.

There is also a women's group in the community that gathers four times a week to practice 'tai chi' around the vicinity of the project and this has fostered solidarity and unity. The group had brilliantly organized the feedback session to coincide with launching of the alarm system (a security feature for the residential area) by the Hon Mdm Ng Siew Lai. (This 'tai chi' group was only formed recently.) The group acts as an informal NGO where the women meet and exercise together and perform community work. Around 180 people were gathering and around 60% of them were women.

The Taman Duku Residents' frequently hold gatherings and social functions to celebrate festive occasions. The main driver behind this was again women in the community. They chose activities that would attract women and the family. With the formation of the informal "tai chi' group, women felt more empowered and they could perform community work more efficiently and effectively.

The women in the community were benefited from various training courses offered to supplement composting. Women's attendance has outnumbered men in most of these courses on gardening, landscaping, composting and vegetable farming. Participants found these courses very practical and useful and requested follow-up courses.

Written by: Khor Hung Teik and Jubaiya Jahan

Integrated Air Pollution and Solid Waste Reduction for the Small-scale Plastic Recycling Industry in HCMC by Applying the Clean Production Technology

Implementer: Nguyen Thi Xuan Huong
Gender Expert: Vu Phuong Ly

The small scale plastic recycling industry in Ho Chi Min city was polluting air due to lack of air pollution reduction technology and lack of proper solid waste management technology. Therefore, the local authority ordered the industries to move to an industrial zone or to close. This project introduced cleaner production technology to reduce air pollution and solid waste that helped the industry to run in the community.

There are a number of female employees working in the small scale plastic enterprises in Ho Chi Minh city. They are working in very polluted environmental conditions and are not aware about the risk to their health and safety in work place. The air pollution caused by plastic recycle production was causing dry cough and skin allergy among the workers.

Figure 12 : Women Works in the Plastic Recycle Industry

Figure 13 : Women Union of Ward Binh Hung Hoa A, Binh Tan District Participate in the Workshop on Gender Equity and Environmental Protection .

Following the orders of local authorities, the baseline survey showed that if the industries are to close or be moved to other places, local female workers will suffer more than men because women have a lower education level than men and will face more difficulty in finding a job with stable income around the community. Moreover, women cannot work far away from home because of their family responsibilities. Therefore, it is necessary to introduce cleaner technology to these factories so that they will be able to remain in the community and help create more stable jobs for women in the community.

The project did a baseline survey among the employees that revealed gender based health problems. The project prepared a leaflet describing the gender based health problems among women and men and how these differed depending on physical structure and differing roles men and women play in the factory. The language and illustrations in the leaflet are reader-friendly to ensure that those with low education would understand the messages. The leaflet includes safety precautions for workers in the plastic recycling industry.

The Women's Union has existed in this area for more than 18 years and has very strong network at the root level in the community. The Women's Union is very active in environmental cleaning activities (WU organizes cleaning activities in the community every weekend) but often upheld the traditional gender division of labor and was not active in promoting gender equality. The project worked with Women Unions network not only to disseminate the project information and to organize community activities, but also to raise awareness of local people on environment and gender equality.

The project organized a workshop on gender equality and gender roles in urban environmental management. To motivate the participation of local people, there were many games designed for the workshop to make sure that they understand the main message of the workshop. In the view of the chair of Community Women's Union, this workshop not only raised the awareness of participants, but also changed the view of the Women's Union on how to organize activities for the community on promoting gender equality. The women's active involvement in the project activities as members of the management team to direct the implementation of the project at the commune level provided evidence for local authorities to change their minds on the capacity of the Women's Union and the leadership ability of women.

Written by: Vu Phuong Ly and Jubaiya Jahan

Community Based Solid Waste Collection Bangplee New Town Community, Samut Prakarn, Thailand.

Implementer: Nattawut Usavagovitwong
Gender Expert: Nattawut Usavagovitwong

Solid waste management was a big problem for Bangplee New Town Community. Therefore, this project introduced waste separation, composting and merchandizing which will help to sustain the community environmentally and economically.

The project provided a waste separation tray and constructed a waste composting site and organized a two day workshop on Solid Waste Management. The first day of the workshop covered knowledge on types of waste (recyclable waste, organic waste, hazardous waste, etc), the waste management cycle and economic and environmental benefits of waste management. The second day of the workshop included demonstration and practice on how to separate waste correctly and how to prepare micro-organism solution. The project also organized a field visit which gave the idea to the participants about the required cost and needed manpower to do waste disposal and also the technique to do conventional composting and earth worm composting.

Figure 14 : Collecting Waste from the Market

Figure 15: Waste Separation Shelter

The project created short time employment for six men and ten women. Among them five men got a job for one month while the rest of the men worked for eight months. On the other hand ten women got employment for eight months. The project employed five men for construction of a recyclable waste shelter and composting buckets with a payment of US$ 75 each for one month. Another man was employed to monitor composting activity for eight months with a payment of US$ 14 per month. A woman was employed as Project Manager with a monthly allowance US$ 20 per month for eight months and another three women were employed for waste collection with a monthly wage of US$ 60 each per month for eight months. Two more women were employed for waste separation with a monthly wage of US$ 45 each per month for eight months. Another woman was employed as an accountant with a monthly salary of US$ 30 per month for eight months. Three more women are employed doing composting work at a monthly payment of US$ 12 each per month for eight months. Among the ten women, seven were full time housewives with no cash income before the project. After training and orientation with the market and suppliers (provided by the project), a few women became self employed doing earthworm composting and waste merchandising.

The Community committee and environmental committees were partners of the project. Two-thirds of the committee members were women. The head of the community committee and head of environmental committee were both women. This proves the ability of women to work with social and environmental issues.

Written by: Nattawut Usavagovitwong and Khin Hnin Phyu

Reduction of Air Pollution from Open Burning of Solid Waste Scavenging Community, Hanoi, Vietnam.

Implementer: Quach The Khoi
Gender Expert: Vu Phuong Ly

Trieu Kheu village is the most polluted village in Hanoi since thousands of tons of Solid Waste are collected and transported to this village everyday and many people in this village are engaged in solid waste business. The project introduced a solid waste combustion device to reduce the solid waste management problem of the community.

In this village, among the total 2691 households 232 households are earning their living from Solid Waste scavenging and recycling. These are family businesses that have been passed on from generation to generation. Thousands of people are working here, mostly women, and their income is around US$ 10-15 per month. They travel to different places in the city to buy the recyclable solid waste such as plastic, iron, waste papers, and poultry feathers etc. On an average, the amount of solid waste collected and transported to the village is about 150tons per day from which 2 tons of unused solid waste is generated.

Figure 16: The Project Area before ADP

Figure 17: The Project Area after ADP

The purchased solid wastes are stored and preliminarily processed (sorting, cleaning and drying for reuse and recycle) at home. Those households who do not have enough land for storing, store the solid waste at the road outside their houses. After sorting, the unused wastes (which consist mainly of plastics) are dumped along the walking paths and roads and vacant land in the village. When the wind blows, the waste litters all the surrounding areas. In the late evenings or at night, the dumped waste is often burned illegally in the open and causes severe air pollution. The smoke smells and ash particles can be found as far as 5-6 km away. Incomplete burning of the plastic waste causes emission of a large amount of toxic air pollutants and the high concentration of smoke directly affects people who are living and working in the village, especially poor women and children who live in the houses adjacent to the dumping sites.

A sanitary workers group was established in the community by the Commune Women's Union. This fifteen member group collects solid waste from each household for a monthly charge of US$ 3.5 per month (3000VND/per month). They charge an additional US$ 7-16 to solid waste scavenging households according to the volume of un-recycled solid waste. This is a large sum for the poor waste scavengers who earn only around US$10-15 per month, particularly for female headed households where the woman is the sole wage earner in the family. In such cases where they are not paying the charge, the unused waste is not being collected by the sanitary workers.

The project introduced a combustion device in the community. As a result, the solid waste scavenging households now can burn their unused solid waste without any charge which reduces the amount of community solid waste and the community saves some money which they previously needed to spend to transport the solid waste to the landfill.

The installation and operation of the combustion device created two stable jobs for two local people. Initially, the management committee did not agree to employ women in the combustion devise operating activities. The local authority opined that only men could operate combustion device since it needs technical skills. However, after providing technical training on the operation of the combustion device to a woman, the Management committee approved one female and one male to operate the device.

The Commune Women's Union actively participated in this project making the decision on land provision for the project combustion device installation, preparation of the project plan, establishing a working team and a management committee to help implement the project, and organizing meetings with the project stakeholders. The project also ensured training opportunities for women on environmental issues. The project scheduled community meetings to fit with women's schedules to ensure that women could manage their time to participate.

The leader of the local women's union is also a member of the project management committee. Her participation is very important in the project implementation to mobilize the participation of women in the community. The project contributed to the capacity development of the Women's Union leader since the approach of this project on gender equality is quite different from what the Women's Union had previously been doing, that is focusing only on women and not paying much attention to men's involvement in community activities. Gender approaches introduced to local authorities and key members of the commune women's union is a new concept. Therefore, the participation of Women's Union chair, Ms. Nga changed her views on women's participation and how men can support women in community activities and promote women in leadership positions.

Written by: Vu Phuong Ly and Jubaiya Jahan

Collecting Boat People's Human Excreta and Environment Education in Hue City, Vietnam

Implementer: Phan Van Hai
Gender Expert: Ngo Thi Thuan

Figure 18: A Woman is Looking the Portable Toilet

Figure 19 : Use of Toilet is Checked

Around 7,000 boat people are suffering from sanitation and hygiene problem due to lack of toilet facilities. Women suffer more because they need to go far away inside the river usually at night or early in the morning to obtain privacy. The project team discussed the comfortable design and height of the toilet with women community members and provided 50 portable toilets and training on toilet use and excreta collection. The project also provided training on environment protection, maternal and child care, gender equality, gender roles and sharing housework, women's participation in community work. At the beginning, the male community refused to do toilet cleaning activities because they had a preconception that toilet cleaning is dirty work, therefore it is women's responsibility. However, after the gender equality training and motivation by the gender expert, they shared toilet cleaning activities equally with women.

Written by: Ngo Thi Thuan and Jubaiya Jahan

Community Based Drainage and Sanitation for Parkhoiu Area and Houa Xieng Village, Luang Prabang, Lao PDR.

Implementer: Souphanouvong University Pilot Project Team, Lead by Khamph Sisavanh, Project Director
Gender Expert: Theonakhet Saphakdy

Luang Prabang city is the capital of Luang Prabang Province which is located at the Northern central side of Lao PDR, on the Mekong River and about 425 km North of Vientiane city. The current population of the city is about 103,000. The city was formerly the capital of Lao PDR and also recognized as a UNESCO World Heritage Site in 1995.

The chosen project area is located in three different places in Par Huay urban area of Luang Prabang town: Vat Nong village, Chomekong village and Xiengmuan village. The total number of female population in the project area of the three villages are 547 while, male population is only 500.

The buildings or architectures in the project area are illustrated through six main types: foreign house, hotel, guesthouse, restaurants. The total numbers of residential

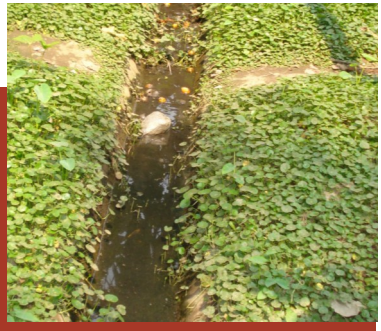


Figure 20 : Drainage System before the Project

Figure 21 : Women Union along with Other People are Working on Solid Waste Management

houses are at highest percentage of 39% of all types, next is guesthouse with covering of 20% and the smallest percentage goes for hotel covered only 1%.

Even though there subsist quite stable and permanent drainage systems, some major environmental problems still exist, such as: bad smell from blocked drainage pathways, unorganized solid waste and garbage dumping, untreated solid waste dumping into the Mekong River. Women and children especially suffer more from bad odor since, most of the time, they stayed at home.

The project team had a base line survey and found the most interesting thing is that women community members of the targeted groups carry out the tasks while men community members are responsible for management activities. For instance, as approximately equivalent responses came up from three targeted groups that cleaning and garbage collecting task is heavily undertaken by women, about 70-75% compared with men of only about10-15%. The project involved Women's Union from the beginning to ensure women's participation in practical and managerial levels; such as: women have opportunity to share their ideas on managing waste water and sanitation. A "Stakeholder's Workshop" was organized to encourage women's interest and participation in waste water management and to make them aware of the benefits of participation of women in decision making, gender specific benefit of the project, and the need for maintenance of environment. After the workshop the Women's Union agreed to work for the sustainability of the project and continue to work for the maintenance of drainage and sanitation in their community.

Written by: Theonakhet Saphakdy and Jubaiya Jahan

Exploring Community and Scavengers Partnership in Solid Waste Management in Kelurahan Rawajati, Jakarta (Local Government Support for Informal Networks on Solid Waste Management in Jakarta)

Implementer: Urban and Regional Development Institute (URDI), Indonesia

The project tried to reduce the solid waste management problem in the community by exploring feasible and effective ways through which informal scavengers' reputation, social acceptance and livelihood stakes can be improved via a community, scavengers and local government partnership project in an integrated solid waste management system.

Before the intervention of the project, women group and elders (retired people) were actively involved in collection and management of the waste in their respective locality. Beside transporting waste to temporary disposal site, they also developed simple composting plan for organic waste. On the other hand, there are informal scavengers working in this area to collect valuable non organic wastes such as plastic, paper, etc. Their existence were less recognized by local government and sometime became nuisance for community. The community had ideas to integrate informal scavengers into local SWM system.

Figure 22: Informal Scavengers are Recognized by Uniform

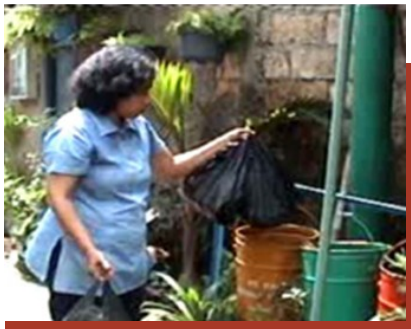


Figure 23: Organic and Inorganic Waste Separation in RW 03 Rawajati

The project supported the initiatives of women and elders in managing solid waste through wastes collection from the households and transport them to the temporary disposal sites. The project introduced a proper registration system and uniform for the scavengers this made people start thinking positively about the scavengers as a group of people who are involved in keeping their environment clean and secured the neighborhood from irresponsible scavengers. The project also trained women community members to sort out organic and non-organic waste and do recycling which made waste management easier and saved time for waste collection for the scavengers. Since the project established cooperation and partnership between the community and scavengers, the quality of the environment was getting better as the community and scavengers worked together to improve their solid waste management and to keep their environment clean, safe and healthy. This condition led to increase the trust among themselves.

The income of scavengers from solid waste increased and they spent less time for separating the waste as the community assisted them in segregation.

Written by : URDI and Khin Hnin Phyu

Population Pressure, Utilization of Chemicals in Agriculture Health Outcomes and Solid Waste Management in Nongkangplu Sub-district, Nongkhem District, Thailand.

Implementer: Institute for Population and Social Research (IPSR), Mahidol University, Thailand

The orchid is one of the leading export products of Thailand. The orchid planting industry makes extensive use of chemical substances in order to maintain competitive advantage in the world market. A study conducted by the Institute for Population and Social Research, Mahidol University in 2005 found that women and men play different roles in orchid farming which can cause different levels of exposure to chemical substances and can create different kinds of health risks. The study tried to investigate the differences in roles of women and men in access to and control over resources and the differences in health risk exposure to chemical substances. The study also tried to raise community awareness and local capacity in understanding the linkages between the use of chemical substances and health risks (Srivirojana et al, 2005).

This study found that 45% of respondents did not keep the chemical substances separately from other materials in a place inaccessible to children and others. 20% of the respondents do not mix the chemicals following the instructions provided on the product label. About

Figure 24 : Orchid Arrangement and Selection

Figure 25 : Blood Test

10% of the respondents use more chemical substances than the recommended level because they believe that using higher dose will be more effective in preventing insects. These practices are harmful to human health, not effective in preventing the infestation and waste of resources. Around 25% of orchid farmers mix more than two types of the agricultural chemicals which can create synergistic or antidote affects with the chemicals. The study also explored the roles that women play in orchid farming including buying chemicals, planting and harvesting orchids, arranging flowers and leaves for selling after harvesting, watering the orchids, controlling income and expenditure of the orchid farm, taking care of their husband and farm laborers and planning for managing orchid planting. Roles that man play in orchid farming include buying chemicals, planting and harvesting orchids, spraying, mixing chemical, watering the orchids and transporting orchids for sale (Srivirojana et al, 2005).

The study conducted blood tests among the workers to examine the level of cholinesterase in plasma. The blood test results showed that those who buy the chemical substances have the highest percentage of health risk followed by the one who manage chemical waste and spray chemicals. The blood test result also showed that people who cut and sell orchids are also at high risk for contamination. Furthermore, the blood test results also show that the proportion of men who are "at risk and danger" (the second and the first highest levels of chemical contamination) is higher than women (25.7% and 17.9%). (Srivirojana et al, 2005). The study also revealed that the probability of contamination not only depends on the role which is being played by an individual woman or man but also depends on personal health status.

Written By: ISPR and Nila Sharma

Indoor Air Pollution as a Reflection of Gender and Poverty Issue: A Study on Women, Health, Behavior Pattern and Kitchen in Phnom Penh

Implementer: Development and Appropriate Technology (DATe), Cambodia

Indoor air pollution due to traditional stove use is a big problem in Phnom Penh. In most cases women are the primary cook so women have more exposure to household smoke than men do. The project first did a survey among 170 traditional stove users to find out the problems relating to traditional stove use and then supplied an improved stove to each of the respondents. After one year the project again did a survey to observe the changes among the improved stove users.

From the first survey, it was found that 65% of the respondents used the traditional stove. Gas stoves were used by 25% of the respondents and New Lao Stoves and rice cookers were used by 5% and 2% respondents respectively. More than 50% of the respondents were spending 1-2 hours each time for cooking in the morning and in the evening. Others are using less than one hour. Very few are spending more than 2 hours for cooking either morning or evening meals.

Figure 26 : A Women is Cooking with Traditional stove

Figure :27 A Woman is Cooking with Improved Stove

Among the respondents 42% were cooking for commercial purposes and they were spending an additional 1-3 hours to cook food besides the cooking time for their own daily consumption. Among these commercial cookers about 17% of women were spending less than 1 hour where as about 16% women were spending more than three hours per day cooking for commercial purposes. It was found that most of the respondents are suffering from eye pain, acute respiratory problems and coughing. Some cases of headache, shortness of breath, tuberculosis, bronchitis and asthma were also found.

The second phase of this research is preliminary exploratory research to examine the impact of improved cook stove among women, particularly related to their working time, comfort, economy, health and gender relations. From the survey it is found that on average, the improved stove saved cooking time of 35 minutes a day. The major reason for this saved time is due to the fact that it is easy to ignite fire in this kind of cook stove and the efficient use of energy allows for a shorter cooking time. It was also found that the time saved has been utilized to do other household work, taking care of children, as well as for some income generating activities. Although the actual time saved is short but the women could use this time for their own development, which would in turn help them to improve their status.

All respondents (100%) agreed that the new stove is easier to use than the old stove. The major differences they have found are: it gave a good source of heat, the stove is durable, it is easy to ignite the fire, it cooks faster, can be used with charcoal and wood, is not heavy so it is easy to move from one place to another, there is less smoke, it is charcoal (energy) saving and easy to use for multi-purposes such as cooking food, grilling fish etc. This stove can also be used with a small piece of charcoal.

Eighty-two percent of respondents said that the improved stove has reduced eye pain or burning sensation because it produces less smoke and eighty-eight percent said that they have observed that this stove produces less ash in the kitchen compared to their previous stove. This means that the new stove produces less dust which would usually go into the lungs of people staying in the kitchen.

On average, 5.38kg per month of charcoal was saved in each family by using the improved stove, and this was confirmed by respondents who said that they have saved roughly US$ 1 (4213 Riel) per month. Some of the respondents are using this saved money to buy medicine for their family members, whereas, others were using it to pay water and electricity bills, to buy food, or on their children's education. In con clusion, they are using savings for other household expenditures. Most of the respondents have found a decrease in chronic cough, eye pain, head ache and other diseases.

Lastly, it has been found that some men were encouraged to cook due to the reduction of smoke and easy ignition of the stove, but the number is not significant. In order to change this gender division of labor, there should be a multi-dimensional approach, including raising awareness about women's strategic needs.

Written by: DATe and Jubaiya Jahan

Wastewater Management (WWM) in the Bangkok Metropolitan Region (BMR): A Search for Public Policy and Action Programs to Improve the Local Environment

Implementer: Department of Drainage and Sewerage, Bangkok Metropolitan Administration; Department of Landscape Architecture, Faculty of Architecture, Chulalongkorn University; Urban Environmental Management, Asian Institute of Technology (A. T. M. Nurul Amin)
Gender Expert: Tanaradee Khumya

The Local Gender Expert (LGE) did a survey among four communities in Bangkok Metropolitan Region to understand the different views of women and men on improving the local environment. Her findings showed that, amongst the four communities two communities which are run by female heads are more concerned about environmental issues than the other two communities which are run by male heads. One of the communities which is run by women is the best community overall in terms of cooperating in environmental services.

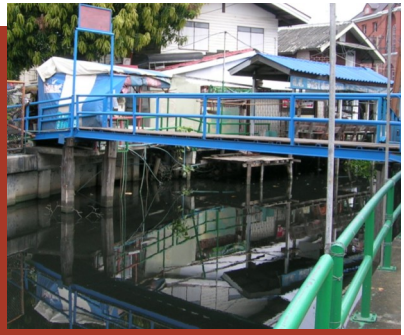


Figure 28 : Study Area

Figure 29 : Gender Expert with One of the Community Head

If there is some problem related to water supply, women first recognize the problem. This may be due to the fact that women are the main persons to do household work related to water supply. However, it is generally men who fix the water supply problem. It may be due to traditional gender division of labor that men generally do the technical work. Women are more satisfied with the BMA policies than men because women take BMA policies into account in solving their daily needs such as the work done by the BMA staff in the community. On the other hand, men seldom contact BMA officers directly and tend to evaluate BMA from the perspective of overall outcomes in their communities including Bangkok.

Women expressed more willingness than men to participate in any process of waste water management than men and the survey findings show that women are more concerned about environmental problems than men. The findings illustrate that women are the main family member who pays the water bill. The proportion of women who are willing to pay for waste water management is higher than men (52.7 and 42.7 percent respectively). The overall fee that the respondents are willing to pay for waste water management is 28.5 Baht per month per household, while women are willing to pay more than men (30.8 and 26.3 Baht respectively). Although women are willing to participate in any kind of program arranged by BMA, policy makers should consider the burden that may need to be shouldered by women. For example, if the development programs concern gender issues in waste water management but women need to shoulder all responsibilities then it will overburden women who also have reproductive and community work. The LGE's recommendation is that the policy makers should consider this gender analysis result when they formulate policy.

Written by: Tanaradee Khumya

Sustainable Wastewater Management in Tsunami-Hit Area through People Participation: A Case Study at Phi Phi Iland, Thailand

Implementer: Phi Phi Local Community Organization (PPLCO) and Environmental Engineering and Management, Asian Institute of Technology (Thammarat Koottatep)
Gender Expert: Jawanit Kittitornkool

The project investigated different groups of people on Phi Phi Don Island in Krabi Province in terms of their level of participation, perceptions, willingness and satisfaction of the waste water treatment project, as well as listening to suggestions about the project improvement. Data were mainly derived from a survey questionnaire and a series of focus group discussions. The number of women taking part in the discussions was relatively low compared to men because of inadequate knowledge and awareness of the importance of the project and limited time available. However, the women who did participate remained active until the end of the day while 40% of the men left after lunch. Women were active in identifying problems related to the wastewater management project, ranking the problems and giving solutions to each problem.

Figure 30 : Focus Group Discussion

Figure 31 : Focus Group Discussion

One of the findings from the questionnaire analysis is that women play a key role in waste water management - a common gender based practice in most Thai households. The women members who participated in the focus group discussions were also very active in networking and taking initiative for community development activities. Therefore, women could play an important role in promoting people's knowledge and awareness about the importance of sustainable waste water management since it is a critical factor for the sustainability of tourism of Phi Phi Island in the long run.

Written by: Jawanit Kittitornkool

Micro-vendors' Association's Leadership in the Development of a Solid Waste Management System in Daem Kor Market, Phnom Penh: A Process Documentation

Implementer: Cambodia Geoinformatic Technology Centre and Gender and Development Studies, Asian Institute of Technology (Kyoko Kusakabe)
Gender Expert: Ouk Chansopheap

Daem Kor market in Phnom Penh is one of the largest wet wholesale and retail market in Cambodia. The market operates 24 hours a day, thus creating a large challenge for solid waste management. There is a micro-vendors' association in Daem Kor Market. Almost all of the vendors in the market are women, and the micro vendors are often harassed by authorities since they do not have an official entitlement to sell at the market. They face double discriminiation by being women and by being poor.

Figure 32 : Meeting with Phnom Penh Municipality

Figure 33 : Anti Littering Campaign

The action research documented the process in which the vendors' association negotiate and achieve the improvement in sanitation situation in Daem Kor Market. They have organized several small meetings and a large workshop inviting municipality officers to discuss how they can improve the solid waste management. In the end, they have decided to buy a pressured water cleaner to be used to clean the market. They have also provided an environmental awareness campaign in the market.

Initially, the vendors' association leaders and core members were very shy and lacked confidence and thought that not only the authorities but also their peer vendors would not listen to them. However, through a series of meetings supported by a NGO Cambo-GEOTECH, they slowly gained confidence. By getting positive responses from their fellow vendors, they have gained confidence and demonstrated leadership in improving the situation. Even though with the short project period, no statistically significant change in vendors' attitude towards solid waste management was found, what was significant was the experience of the vendors' association in taking initiative to improve their environment and the confidence that they gained through the process.

Written by: Kyoko Kusakabe

Benchmarking on Environmental Infrastructure Management in Selected Cities of Southeast Asia

Implementer: The Faculty of Environment, Ho Chi Minh University of Technology (HCMUT), Vietnam; Decentralized Cooperation and Environment Division of Bureau of Foreign Affairs (BOFA), Hue CPC, Hue City, Vietnam; Bureau of Public Works, Phuket City, Thailand; and Environmental Protection Agency (BPLH), Bandung City, Indonesia; Urban Environmental Management, Asian Institute of Technology (Vilas Nitivattananon)
Gender Expert: Anny Andaryati

This joint action research project was on benchmarking analysis in urban environmental infrastructure management of solid waste, waste water, and water supply management in the three focus cities (Bandung City, Indonesia; Hue City, Vietnam; and Phuket City, Thailand) and the selected benchmarking cities in Asia.

Figure 34 : Benchmarking analysis related to gender was conducted on urban environmental infrastructure management of solid waste, waste water, and water supply management

Figure 35 : Workshops were held in each focus cities to provide some feedbacks from stakeholders

The research found that in the water supply management sector, women are involved in the operation process. However, few females are found among the employers or in management level positions. Hue City could be considered to be an example of good practice for gender integration in providing incentives and social benefits for female staff such as special regulations for women and maternity leave. In the wastewater management sector, women may get higher positions and be involved in decision making, but these opportunities are still limited. Phuket City is an special in that women are given more chances and job opportunities in the operation and planning system. In the solid waste management sector, women's involvement in the planning and management process is low in all focus cities, except Hue City where four non operational and non technical sections in the municipality solid waste sections are headed by women. The nine operational and technical sections are headed by men. The survey suggests that the operational section demands more time and was physically demanding, making it difficult for women to balance household responsibilities and work.

The benchmarking analysis proved to be useful in comparing women's and men's access to resources, ability to make changes, and access to opportunity. Women's input is harder to get so the environment needs to change to be conducive to eliciting their input and ideas.

Written by: Nurrohman Wijaya

References

Arum, Henrica Retno Tyas (2006). Final Report: Clean Water Supply Management in a Low Income Settlement in Cokrodiningratan Village Yogyakarta Municipality, Indonesia.

Atsanavong, Lonkham (2007). Final Report: Decentralized Sanitation for a Cluster of Households in Thongkhankham Neua Village, Vientiane, Lao PDR.

Bridhikitti, Arika and Kanokkanjana, Kanittha (2007). Final Report: Sustainable Rice Straw Management for urban Air Pollution Control in Bang Bua Thong, Nonthaburi Province, Thailand.

Chansopheap, Ouk; Satyanugraha, Suryaputrianita and Kusakabe, Kyoko (2010). Final Report: Micro-vendor's Association's Leadership in the Development of a Solid Waste Management System in Daem Kor Market, Phnom Penh: A Process Documentation.

Cuong, Luu Duc (2006). Final Report: Clean and Green Program: Community-based Urban Agriculture and Solid Waste Management in Hanoi, Vietnam.

Department of Drainage and Sewerage, Bangkok Metropolitan Administration; Department of Landscape Architecture, Faculty of Architecture, Chulalongkorn University; Urban Environmental Management, Asian Institute of Technology (Amin, A. T. M. Nurul) (2010). Final Report: Wastewater Management (WWM) in the Bangkok Metropolitan Region (BMR): A Search for Public Policy and Action Programs to Improve the Local Environment.

Development and Appropriate Technology (DATe) and Asian Institute of Technology (AIT) (2008). Final Report: Indoor Air Pollution as a Reflection of Gender and Poverty Issue: A Study on Women, Health, Behavior Pattern and Kitchen in Phnom Penh.

Development and Appropriate Technology (DATe), Cambodia (2007). Final Report: Indoor Air Pollution as a Reflection of Gender and Poverty Issue: A Study on Women, Health, Behavioral Pattern and Kitchen in Phnom Penh, Cambodia.

Fernandes, Salomao Fraga (2007). Final Report: Sustainable Clean Water Facility in the Community of Kotalala, Timor-Leste.

Hai, Pham Tran (2005). Final Report: Improvement of Clean Water Delivery in Phuoc Kien Commune, Nha Be District, Ho Chi Minh City, Vietnam.

Hai, Phan Van (2009). Final Report: Collecting Boat People's Human Excreta and Environment Education in Hue City, Vietnam.

Huong , Nguyen Thi Xuan (2008). Final Report: Integrated Air Pollution and Solid Waste Reduction for the Small Scale Plastic Recycling Industry in Ho Chi Minh City, Vietnam by Applying the Clean Production Technology.

Institute for Population and Social Research (IPSR), Mahidol University and Asian Institute of Technology (AIT) (2007). Final Report: Population Pressure, Utilization of Chemicals in Agriculture Health Outcomes and Solid Waste Management in Nongkangplu Sub-district, Nongkhem District, Thailand.

Jirawatthavee, Monthavee (2007). Final Report: Decentralized Integrated Environmental Management in Tsunami Affected Area in Baan Nam Khem Pattana Community, Phang Nga Province, Thailand, Chumc Honthai Foundation.

Kantawanichkul, Suwasa (2008). Constructed Wetland System for Treatment of Waste Water from Fermented Fish Production, Ban Sang, Phayao, Thailand.

Khatri , Abdul Rashid (2009). Final Report: Community Managed Safe Drinking Water Supply Project, Khan Dangkhor, Phnom Penh, Cambodia.

Khoi, Quach The (2008). Final Report: Reduction of Air Pollution from Open Burning of Solid Waste in a Solid Waste Scavenging Community, Hanoi, Vietnam.

Khumya, Tanaradee (2010). Gender Expert's Final Report: Wastewater Management (WWM) in the Bangkok Metropolitan Region (BMR): A Search for Public Policy and Action Programs to Improve the Local Environment.

Kittitornkool, Jawanit (2009). Gender Expert's Report: Sustainable Wastewater Management in Tsunami-Hit Area through People Participation: A Case Study at Phi Phi Island, Thailand.

Kusakabe, Kyoko; Haque, Md. Mozammel and Rajbhandari, Rajani Amatya (2007). Gender Equality in Urban Environmental Management in Selected Southeast Asian Cities, CIDA AIT Partnership, SEA-UEMA Project, Asian Institute of Technology, Pathumthani, Thailand.

Kusakabe, Kyoko and N, Veena (2008). Gender Equality in Urban Environmental Management A Casebook, CIDA AIT Partnership, SEA-UEMA Project, Asian Institute of Technology, Pathumthani, Thailand.

Lumampao, Feri G (2008). Final Report: Provision of Community Based Bio-sand Filter as Household Water Treatment to Provide Access to Water Supply in Poor Urban Settlement in Bali and Eastern Indonesia.

Ly, Vu Phuong (2008). Gender Expert's Report: Integrated Air Pollution and Solid Waste Reduction for the Small-Scale Plastic Recycling Industry in HCMC by Applying the Clean Production.

Ly, Vu Phuong (2009). Gender Expert's Report: Reduction of Air Pollution from Open Burning of Solid Waste Scavenging Community, Hanoi, Vietnam.

Minh, Duong Hieu (2005). Final Report: Community Based Integrated Sanitation Management in Vinh Quynh Commune, Thanh District, Hanoi City, Vietnam.

Nurmandi, Achmad (2007). Final Report: Decreasing River Pollution along the Edge of Code River of Yogyakarta, Indonesia.

PALAWA Association, Indonesia and West Java Environmental Protection Agency (BPLHD Jawa Barat). (2007). Final Report: Developing Water and Sanitation Basic Service Discourse, Bandung City, West Java, Indonesia.

Phi Phi Local Community Organization (PPLCO) and Environmental Engineering and Management, Asian Institute of Technology (Koottatep, Thammarat). (2009). Final Report: Sustainable Wastewater Management in Tsunami-Hit Area through People Participation: A Case Study at Phi Phi Island, Thailand.

Saguit, Ronilo S (2008). Final Report: Community Rainwater Harvesting in Budlaan II Amazing Gawad Kalinga Village, Cebu City, Philippines.

Saphakdy, Theonakhet (2010). Gender Expert's Report: Community Based Drainage and Sanitation for Parkhoiu Area and Houa Xieng Village, Luang Prabang, Lao PDR.

Solid Waste Management Association of the Philippines (SWAPP) (2009). Final Report: Operationalizing the Lgu-Junkshop Partnership in Support to the Cluster Materials Recovery and Composting Facilities Project of General Mariano Alvarez, Cavite, Philippines

Son, Nguyen Nam (2005). Final Report: Demonstrating Community Based Environmental Sanitation: Working with Milk Cow Rearing Communities in Ho Chi Minh City, Vietnam.

Sophea , Hor (2009). Gender Expert's Final Report: Community Managed Safe Drinking Water Supply Project, Khan Dangkhor, Phnom Penh, Cambodia.

Souksakhone, Phouthala (2007). Final Report: Integrated Environmental Management of a Typical Low Income Community, Nong Daung Thong, Vientiane, Lao PDR.

Srivirojana, Nucharee; Theptepa, Thanalak; Punpuing, Sureeporn; Thun, Kumthong; Guest, Philip; Chankham, Olarn and Suvansrual, Apinya (2005). Population Pressure, Utilization of Chemicals in Agriculture Health Outcomes and Solid Waste Management in Nongkangplu sub-district, Nongkhem district, Thailand. Institute for Population and Social Research, Mahidol University, Nakorn Pathom.

Standing, H (2004). "Gender, Myth and Fable: The Perils of Mainstreaming in Sector Bureaucracies", *IDS Bulletin*, 35:4, 82-88.

Syhakhang, Yommana (2010). Final Report: Community Based Drainage and Sanitation for Parkhoiu Area and Houa Xieng Village, Luang Prabang, Lao PDR.

Teik, Khor Hung (2007). Final Report: Community Composting for Taman Duku Residential Area, Kg Seronok, Juru, Penang, Malaysia.

The Faculty of Environment, Ho Chi Minh University of Technology (HCMUT), Vietnam; Decentralized Cooperation and Environment Division of Bureau of Foreign Affairs (BOFA), Hue CPC, Hue City, Vietnam; Bureau of Public Works, Phuket City, Thailand; and Environmental Protection Agency (BPLH), Bandung City, Indonesia; Urban Environmental Management, Asian Institute of Technology (Vilas Nitivattananon) (2009). Benchmarking on Environmental Infrastructure Management in Selected Cities of Southeast Asia.

The Joint Graduate School of Energy and Environment (JGSEE) (2006). Final Report: Strategic Planning of an Integrated Solid Waste Management of a Medium Scale Municipality in Thailand.

Thong, Quach Huy (2005). Final Report: Solution to Reducing Environmental Pollution in a Traditionally Manufacturing Village in Hanoi City, Vietnam.

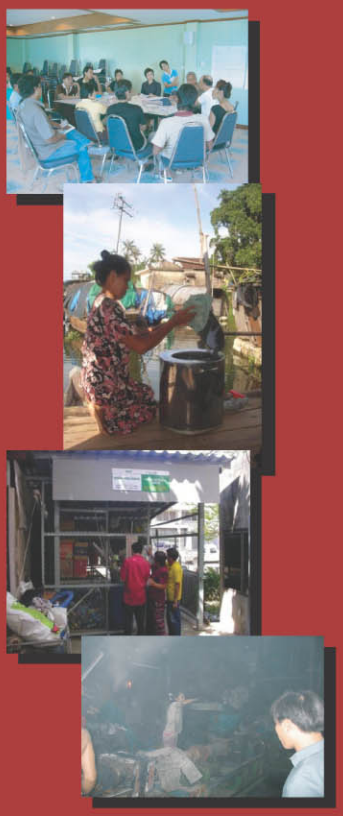
Thuan, Ngo Thi (2010). Gender Expert's Report: Collecting Boat People's Human Excreta and Environment Education in Hue City, Vietnam.

Urban and Regional Development Institute (URDI) and Asian Institute of Technology (AIT) (2006). Final Report: Exploring Community and Scavengers Partnership in Solid Waste Management in Kelurahan Rawajati, Jakarta (Local Government Support for Informal Networks on Solid Waste Management in Jakarta)

Usavagovitwong, Nattawut (2006). Final Report: Community Based Solid Waste Collection Bangplee New Town Community, Samut Prakarn, Thailand.

Yen, Dao Hai (2007). Final Report: Cleaner Technology for Reduction of Air Pollution from Small Scale Glass Recycling Industry in Ho Chi Minh City, Vietnam.

Yogantara, D. Sunardhi (2008). Final Report: Sustainable Community Based Sanitation Improvement and Small Scale Clean Water System Initiative in Citarum Riverside Settlement, Cilebak, Bandung, West Java, Indonesia.



Southeast Asia Urban Environmental Management
Applications (SEA-UEMA) Project
Urban Environmental Management Field of Study
School of Environment, Resources and Development
Asian Institute of Technology
P.O. Box 4, Klong Luang
Pathumthani 12120, Thailand

Tel: + 66 2 524 5777
Fax: + 66 2 524 8338
Email: uemapplications@ait.ac.th
Website: http://www.sea-uema.ait.ac.th

This monograph is published with the financial support of the Government of Canada provided through the Canadian International Development Agency (CIDA).