

WASTE-ECON

"Making waste work for the economy"

Volume 6 - 7/2003

A. NEWS AND ACTIVITIES

1. The Project Steering Committee Meeting and the Fourth National Planning Conference held in Hanoi

The Project Steering Committee met in Hanoi on 21 February 2003 to review past activities, discuss future plans, and prepare for the Fourth National Planning Conference and the first International Conference with all four partner countries to be held within the framework of the Waste-Econ Project.

The Fourth National Planning Conference took place from 25 to 26 February 2003 in Hanoi. It was attended by Canadian representatives, members of the Steering Committee and Secretariat, and invited guests from a number of local management agencies, universities, and mass media. Reports presented at the conference focused on the review of the past year's project activities and outcomes; results of the mid-term evaluation of the Waste-Econ project; result based management activities; creation of an evaluation framework for the pilot projects; and elaboration of the 2003-2004 project work plan. Following is a summary of the 2003-2004-work plan as discussed and agreed upon at the conference:

- Focus on completion of the detailed waste-economy framework curriculum;
- Promote the implementation of pilot projects and further enhance spin-off projects;
- Deliver a training course on waste economy for women in Hai Phong City;
- Organize follow-up workshops upon completion of the waste economy training;
- Finalize enrollment of candidates for waste economy post-graduate training in Canada, giving priority to female candidates;
- Develop and implement a study plan for Canadian students in Vietnam; and

- Promote public awareness of the project through mass media, and continued publication of the Waste-Econ Newsletter and relevant books.

(Tang The Cuong)

2. The First International Conference of the four partner countries held in Vientiane, Laos

The First International Conference with attendance by participants from Canada, Vietnam, Laos, and Cambodia was organized in Vientiane, Laos, from 28 to 29 March 2003. During the conference, the representatives presented each country's reports on the project's progress and future work plans. The partners discussed relevant topics and project activities and shared their experiences.

Planned activities for this year and cooperation between the partners were also discussed at the conference. All partners expressed their willingness to support and share experiences with each other. Cooperative activities will be outlined in each partner's work plan. The Canadian Waste-Econ Project Director, Prof. Virginia Maclaren expressed her support and commitment to effective coordination of all cooperative activities.

(Tang The Cuong)

3. A Workshop on "The Waste Economy Curriculum Framework" in Hanoi

This was the second workshop (held in Hanoi on 22 February 2003) discussing the contents of the waste-economy curriculum framework. The workshop was attended by representatives from management agencies of the ministries of Science and Technology, Natural Resources and the Environment, Education and Training, Construction and others, and research institutions and universities from Northern, Southern and Central Vietnam.

During the workshop, participants provided comments and contributions to the eighth draft of the waste economy framework curriculum prepared by the project team. Comments from researchers, instructors and managers contributed to the framework and future modifications.

(Tang The Cuong)

4. A Workshop on “Municipal Solid Waste Landfill Planning” in Da Nang

A workshop on “Municipal Solid Waste Landfill Planning” was organized from 27 to 28 February 2003 in Da Nang by the Environmental Protection Research Center (EPRC), University of Da Nang in collaboration with the Waste-Econ Project Directorate and the University of Toronto (UofT). Fifty-two (52) officials working in relevant areas from the central and highland provinces/cities attended. Prof. Philip Byer (UofT) presented a paper with the assistance of his two postgraduate students (Laura McNally and Luu Duc Cuong). Mr. Nguyen Ngoc Diep, an instructor working at EPRC, also presented his paper on “GIS application to solid waste landfill planning”.

The workshop focused on how to determine the optimum location for solid waste landfill construction on the basis of sustainable development criteria. In addition to the transfer of basic knowledge in solid waste landfill planning, Prof. Philip Byer also acted as a facilitator, enabling the participants to understand the waste economy approach to the study of environmentally sensitive issues through the workshop discussions.

The participants of the workshop were satisfied with the knowledge received and stated in their evaluations that this was new knowledge that would be useful for their day-to-day work. Representatives of participant agencies expressed their desire to have similar workshops organized by the Waste-Econ Project for their colleagues to learn relevant knowledge in solid waste management and solid waste landfill planning.

(Bui Van Ga)

5. Pilot Research Projects

5.1. Organic Waste Pilot Project at Bai Chay Beach, Ha Long City

During the past year, the pilot project research team continued to work with local stakeholders in Ha Long City to adopt a number of pilot solid

waste management measures for the Bai Chay Beach Resort, namely the Department of Tourism (DoT), the Urban Environment Company (URENCO), the Department of Science, Technology and the Environment (DOSTE), the Bai Chay Ward Authority, and local organizations and associations. The research team continued the negotiation and selection of small-scale pilot organic waste composting sites with local communities in Bai Chay Beach in July 2003.

The project has collected and updated the latest information on Ha Long City’s socio-economic development plans involving tourist attraction activities. This information can help the team carry out studies on changes in solid waste composition and generation rates in Bai Chay Beach, and design appropriate solid waste management measures. The team will make further recommendations on solid waste management in Bai Chay Beach and tourist harbors on the basis of this updated information.

The team also helped Zeralynne Te, a Canadian student from the University of Waterloo, Canada, to conduct a field study in Bai Chay Beach, Ha Long City.

(Tran Hieu Nhue & Nguyen Quoc Cong)

5.2. Project on “Municipal Solid Waste Landfill Planning in Da Nang”

Following an exchange of information with the Canadian advisors at the Fourth National Planning Conference in Hanoi and the Workshop on “Municipal Solid Waste Landfill Planning” organized in February 2003 in Da Nang; the pilot project research team has completed several major activities, as follows:

- A survey (100 questionnaires) investigated the health and occupational awareness of local waste pickers at the Khanh Son dumpsite.
- A survey (100 questionnaires) investigated local people’s attitudes towards the existing dumpsite, and their desires and proposals for a landfill in the future.
- Software to assist with solid waste landfill planning (LFSITING) completed to support local planners to locate optimum sites for landfill construction. The LFSITING software is run in the MAPINFO medium used with a GIS database. Landfill shape, size and location can

be input on a GIS map, and in many cases, LFSITING can provide other information relating to a site proposed for landfill construction, such as information on population, roads, water resources, quality of soil, and topography. Then social surveys can be conducted in the areas identified in the preliminary site selection. Thus, timing and cost incurred in locating a new landfill could be greatly reduced.

- The LFSITING application can help to identify possible sites where a new landfill can be constructed for Da Nang City, and carry out surveys of the three most feasible sites.
- A report related to the pilot research project has been prepared for presentation at a conference on “ Scientific Research and Transfer of Environmental Technology for Industrial Environment Training and Protection” to be held in Ho-Chi-Minh City from 15 to 16 August 2003. The report entitled “ Solid Waste Treatment and Solid Waste Landfill Planning for Da Nang City” presents relevant experiences in developing countries, a proposed solid waste treatment process appropriate to Da Nang City, including solid waste separation at source, composting and disposal at landfill; and introduction of the LFSITING software to locate optimum solid waste landfill sites from a waste economy and sustainable development point of view.

(Bui Van Ga)

5.3. Gender Outreach Pilot Project for Women Involved in Waste Collection and Recycling in Trang Minh Ward, Hai Phong City

This pilot project has been operational since April 2002. The project organized a review of one year of credit-savings management at Trang Minh Ward People’s Committee. The project has helped 334 local female borrowers to have access to seed loans, and others to additional loans, making up a total amount of VND 340 million. Seventy percent of borrowers participate in center/group activities. Six out of nine centers/groups have full participation of their borrowers. These groups have also achieved a payback rate of 100%.

For the past year, the project has produced many positive socio-economic impacts not only for the female borrowers but also the local development and the social movement of the women’s unions. Economically, the project has contributed to

improving the living conditions of the individual families. Some of the borrowers’ families have effectively used loans to increase their incomes. Statistics provided by the ward-level management indicate that there are 237 out of 334 female borrowers (70% of the total borrowers) who have noticeably improved their income. In terms of the social impact, the borrowers have changed their attitude toward daily-life savings as a result of social activities and interaction at regular meetings organized by centers/groups. Moreover, these meetings also serve as vehicles to educate members about the policies of the Party and the Government, and the local women’s union action program. As a result, more new members have been attracted to join the Union. Now, they have increased awareness of the need for protective work gear among the borrowers, and the borrowers themselves promote environment and health issues within their families.

In June 2003, the central, city, district and ward women’s unions launched the second survey of all borrowers within the framework of the pilot project. While the first survey was carried out with 150 borrowers, this figure has increased to 334 borrowers in the second survey. Several changes in the questionnaires have been made to cover additional aspects of human health and environmental sanitation. The pilot project management board carries out its regular monthly monitoring, and participates in center/group meetings of the local communities. It is expected that the project will continue with an additional disbursement of VND 180 million for new female borrowers in the last six months of 2003. The board aims to achieve their goal to provide 450 women involved in waste collection in Trang Minh Ward with access to loans by the completion of four years of the pilot project.

(Cao Hong Van et al.)

5.4. Awareness Pilot Project for Child Waste Pickers at Nam Son Landfill, Hanoi

As of December 2002, the Nam Son pilot project has completed all activities planned for its first phase. Certain achievements have been made as a result of the implementation of our activities, namely increased environmental awareness among local child waste pickers, promoting the need for education and health awareness for local children; creating general awareness of public health and environmental issues. The pilot project

performance progress report has been finalized for this phase, and the project team has developed and submitted for approval a plan for activities to be implemented in the next phase. Activities include:

- Develop a pilot model for the integration of waste economy with the improvement of child waste pickers' living and working conditions;
- Develop an appropriate model of basic universal education to help those primary and secondary school children facing the possibility of dropping out of school for waste-picking to continue their education;
- Promote effective communication of environmental and children's' rights, with the goal of raising public awareness of, and changing attitudes towards healthy living, working and learning among the local communities; and
- Strengthen effective measures for improving the health of local child waste pickers.

To prepare for the follow-up pilot activities, the team has, in collaboration with the local authorities, conducted a site visit to examine plastics recycling and composting models in the capital town of Bac Giang province and Nhu Quynh, Hung Yen province.

(Pham Bang & Nguyen Van Buom)

B. INVESTIGATIONS - RESEARCH

1. Research by Canadian Students in Vietnam

In 2003, five Canadian students studied various relevant issues within the framework of the Waste-Econ Project in Vietnam, including:

- (1) Esther Rootham, University of Toronto, has assisted a number of pilot research projects, and studied "Environmental Management of Fishery Sector in Vietnam". The study was primarily conducted in Hanoi and Ho-Chi-Minh City.
- (2) Carrie Mitchell, of UofT, carried out Masters' degree research on "Cleaner Production Planning in Ho-Chi-Minh City - a fishery processing case study" in 2002. This year Carrie Mitchell returned to present her research results at the Vietnam Cleaner Production Center.
- (3) Adam D. Watson of UofT carried out Masters' degree research on "Solid Waste Management Capacity Building in Vietnam". His study was done mainly through interviews with relevant

individuals and organizations dealing with solid waste management in Vietnam.

(4) Yogendra Shakya, of UofT, continued his Ph.D. degree research on "Comparing Rural Credit Programs in Vietnam and Nepal". The study was done in Phu Tho and Quang Ninh through interviews with relevant individuals and organizations.

(5) Zeralynne Te, of the Faculty of Environmental Studies, University of Waterloo, is conducting Masters' degree research on "Strengthening Capacity of Informal Collection Sector- A Proactive Approach to Solid Waste Management in Bai Chay Beach, Ha Long Bay". This study is closely associated with the pilot research project on "*Organic Waste at Bai Chay Beach, Ha Long City*". Initially, the study has focused on the review of available documents and the design of questionnaires in Hanoi. This will be followed by field studies at Bai Chay Beach, Ha Long City for two or three months.

During their studies, local relevant individuals, institutions and organizations, particularly Vietnamese partners to the Waste-Econ Project, have provided all these Canadian students with support and assistance.

(Tang The Cuong)

2. Study Results gained by Canadian and Vietnamese Students

2.1. Ho Chi Minh City: On the Road to a More "Ecological" Industrial System

As the second-most populous country in Southeast Asia and one of the most densely populated nations in the world, increased urbanization and industrialization is being experienced throughout Vietnam. Consequently, industrial waste generation is becoming a growing concern.

The situation is especially acute in Ho Chi Minh City (HCMC). It is home to over 30,000 medium and large-scale industrial establishments and the numbers of both domestic and foreign investment are rapidly increasing. Although many of these industries provide employment opportunities and prosperity for members of the local community, their environmental practices are often poor and contribute significantly to urban pollution. Consequently, the feasibility of new and innovative alternatives needs to be explored and incorporated into the planning mechanisms of HCMC.

I conducted my research in HCMC as part of the Waste-Econ Project. The objectives were: to gain an understanding of the planning or institutional structures that influence industrial waste management in HCMC, to identify the potential role of waste-exchanges as a tool for encouraging eco-industrial behaviour, and to explore various planning policies and forms of outside assistance that may be needed in order to promote waste exchanges in HCMC.

During my stay in HCMC, I had the opportunity to conduct in-depth corporate interviews with 9 companies that have been identified as highly polluting industries by Vietnamese government authorities. I also conducted 6 interviews with companies that have been identified as environmental champions. These companies are in the food processing and pulp and paper sectors.

The corporate interviews helped to identify motivations, practices and opportunities for improvement in industrial waste management in HCMC. I found that most companies are vaguely familiar with industrial ecology concepts and are quite interested in participating in innovative programs that will result in cost savings, while contributing to pollution management.

However, a variety of criteria should be met before a waste exchange network can operate effectively. These include: appropriate policies supporting the operation of a waste exchange; funding from various levels of government to ensure long-term sustainability; appropriate infrastructure that is equipped to handle a waste exchange network (i.e. transportation, storage capacity, safety); and most importantly the training of individual companies.

Although many companies expressed an interest in joining a waste exchange network, they also claimed that it is currently difficult in Vietnam due to relatively low levels of awareness and information about it. The Waste-Econ Project could use its expertise and experience in this area by offering training workshops and related information about waste exchanges to a selection of industries located in HCMC.

This project may impact industrial development in Vietnam in a variety of ways. Firstly, its findings may help to better plan the location of industrial establishments. Secondly, innovative policies and techniques such as waste exchange networks could be incorporated into the planning mechanisms of HCMC in order to reduce the

amount of wastes being produced and disposed. Lastly, this project could affect the strategies currently being used by the government and the private sector in marketing industrial sites. Claiming to be “eco-industrial” to the public can be quite a valuable asset for a company’s reputation and its finances. Most importantly however, a waste exchange could lead the way to a more “ecological” industrial system in HCMC.

(Nupur Malaviya M.Sc. Pl, U of T)

2.2. Social Capital and Production Functions of Paper Craft Village Households in Vietnam

The first phase of my doctoral research has identified the impact of social capital (*) on incomes of both local households involved in paper industries and general households in Duong O village, Bac Ninh province. The research quantified and measured social capital in terms of four aspects: membership in local social organizations; sharing of information (social relationships); prestige; and mutual assistance. The research produced the following major findings:

First, like similar experimental research done in other countries, the social capital of Duong O craft village has had a strong impact on increasing household incomes, and it often contributes more than household labor and human resources.

Second, among the four aspects of social capital, the roles that prestige and information sharing (social relationship) play are the most significant in raising local household income.

Third, contrary to other countries, roles that Duong O village’s social organizations and associations play are very limited, and those households who have more members participating in such organizations/associations may have lower incomes than households with fewer participating members.

Fourth, craft village policies on social capital improvement will have greater impact on increasing income in those households involved in paper supply services, trade, agricultural production, than on those households involved in paper recycling.

Fifth, a household social capital has significant elasticity. Like other types of funds, if the social capital is properly used, it may result in increases

in income for the households, otherwise it has no value.

Sixth, there are different trends in expenditure and income between the households involved in paper recycling and others. Therefore, the expenditure can be used as an alternative to income in the determination of a production function, which may be appropriate to this group of households but not others.

(*) *Social capital is defined as a resource internally existing in the social relationship between different subjects. It may improve benefits for both partners or raise economic benefits for all the subjects or for different purposes that all individuals pursue in such social relations.*

(Nguyen Van Ha, Ph.D. Candidate, U of T)

2.3. Community Issues Relating to Solid Waste Landfills in Vietnam: The Nam Son Landfill Case Study

As strong objection to landfills by local communities increases, landfill construction and operation have become more difficult in both developing and developed countries. My research focused on the assessment of community-related issues of landfills in Vietnam based on a solid waste landfill case study of Nam Son, Hanoi, and a review of relevant North American documents. A comparative analysis of issues facing both Vietnam and North America was carried out. The similarities include the nature of issues, the level of local community concern, which decreases with distance from a landfill and participation that influences the public attitudes. One of the most important differences is that in Vietnam, whole villages tend to have the same level of concern, whereas in North America, concerns tend to decline smoothly with distance from the landfill. The second important difference is that at the design stage, Vietnamese designers of landfill construction are likely to have the confidence of the local communities, while during the operation of landfill, this confidence is likely to be lost. Finally, a compensation policy developed for the Nam Son Landfill has not reduced the level of community concern. The research has proposed suggestions for the improvement of policy making to support landfill construction and operation procedures in Vietnam with the goal of minimizing local concern.

(Nguyen Quang Tuan, Ph.D. Candidate, U of T)

2.4. Institutional Issues Relating to the Selection of Solid Waste Landfill Sites in Vietnam: Practical Recommendations

The Government of Vietnam has paid significant attention to solid waste management for the last several years. This has been attributed to increases in solid waste generation and its negative impacts on the environment. At present, disposal of solid waste at landfills is considered to be the most economical waste treatment method that is dominantly applied in both Vietnam and other developing countries. The selection of appropriate landfill sites plays a very important role in the construction of landfills to meet the national environmental standards. The proper selection of landfill sites would help not only prevent potential environmental impacts but could significantly reduce costs incurred in their construction. However, there are many constraints and challenges facing the selection of appropriate sites for solid waste landfills in Vietnam.

My Environmental Engineering Master's degree study entitled "Institutional Issues Relating to the Selection of Solid Waste Landfill Sites in Vietnam – Practical Recommendations" has focused on studies of local institutional issues, organizational structure, and relationships between the local functional agencies involved in the selection of solid waste landfill sites in Vietnam. The research had two major goals. The first was to review the existing procedures for solid waste landfill location, and then conduct an in-depth analysis focused on relevant institutional issues including national legislation, landfill site location standards/ criteria, and procedures, and their linkages with local urban development planning, coordination between responsible agencies, and community involvement. The second was to identify constraints and remaining problems through analysis, on which practical recommendations were made for the improvement of national solid waste landfill site location procedures in Vietnam.

(Luu Duc Cuong, M. Eng. U of T)

3. A spin-off Project on "Planning for Integrated Solid Waste Management of Inter - Urban Centers in Bac Ninh Province until 2020"

A thematic study on "Planning for Integrated Solid Waste Management of Inter - Urban Centers in Bac Ninh Province until 2020" has been carried

out by the Center for Urban and Rural Environment Research and Planning (CRURE), Ministry of Construction (MoC) during 2002-2003. The study has made several recommendations on inter-urban solid waste management in Bac Ninh province, and suggestions for revisions to the National Vietnam Construction Standards relating to the distance between solid waste landfill sites and residential areas as stipulated in the national urban planning procedures.

On 10 March 2003, the Council of Scientists of the Institute of Urban and Rural Planning reviewed the research. At the review, Asst. Prof. Dr Luu Duc Hai, CRURE Director (now Deputy Director, Department of Urban Infrastructure, MoC) presented the project's performance progress after two years of implementation. This project is one of three spin-off projects implemented by CRURE within the framework of the Waste-Econ Project. The team has now revised its final report through the addition and updating of relevant data prior to the submission to the Council of Scientists in August 2003. It is expected that MoC will finally review this project in September 2003.

(Luu Duc Cuong)

C. EXCHANGE OF VIEWS & EXPERIENCES

Canadian University Level Curriculum on Waste Economy (continued)

Hazardous Waste Management (Reading material recommended by the Canadian Professors at the Workshop on Curriculum Development of Waste Economy, Hanoi, May 14-15, 2001).

This book was printed and used in various countries: Canada, USA, England, Australia, Singapore, Korea, Chile, India, Italy, Mexico, Spain, Malaysia, and South Africa.

Michael D. LaGrega, Phillip L. Buckingham, Jeffrey C. Evans: Hazardous Waste Management, Mc Graw-Hill, 2001 (1202 pages).

Contents of the above textbook are as follows:

Part I: Fundamentals

1. Hazardous Waste: working definition, classification, generation,
2. The Legal Framework: laws, regulations,...

3. Process Fundamentals: chemistry, reactions and reactors,
4. Fate and Transport of Contaminants: contaminant release, transport of contaminants,
5. Toxicology: exposure, toxic effects, dose-response relationships,

Part II: Current Management Practices

6. Environmental Audits: introduction, program planning, pre-audit preparation, on-site audit,
7. Pollution Prevention: general considerations, management strategies, life cycle analysis, volume reduction, toxicity reduction, recycling,
8. Facility Development and Operation: facility types, facility operations, needs assessment, site selection,

Part III: Treatment and Disposal Methods

9. Physicochemical Processes
10. Biological Methods
11. Stabilization and Solidification
12. Thermal Methods
13. Land Disposal

Part IV: Site Remediation

14. Quantitative Risk Assessment
15. Site and Subsurface Characterization
16. Remedial Technologies
17. Evaluation and Selection of Remedial Actions and Corrective Measures.

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