

A. NEWS AND ACTIVITIES

1. The Third National Planning Conference

The Third National Planning Conference of the Waste-Econ Project was organized at the Headquarters of the University of Da Nang, Da Nang City, from 22 to 23 February 2002.

Representatives from Canadian partners, CIDA, members of the Project Steering Committee and Secretariat attended the conference, as well as guests from local management agencies, universities, and representatives from Cambodian partners.

Reports presented at the Conference focused on:

- A review of the project performance progress and outputs achieved from the Second National Planning Conference;
- An evaluation of the project's results based management; and
- Details of the project's 2002-03 activities.

The third year work plan of the project was discussed and agreed upon at the conference. It included the following activities:

- Completion of Waste-Econ curriculum framework development; organization of study tours to overseas experiences.
- Organization of a national workshop on the Waste-Econ curriculum framework.
- Further implementation of pilot research projects. Strengthened linkage and coordination between the pilot research projects and local management agencies;
- Organization of two 2 week training courses on waste economics in Nghe An and Son La provinces;
- Vietnamese Instructors' participation in Waste-Econ training courses delivered in Laos and Cambodia;
- Selection of one Waste-Econ master degree student in Canada with priority given to a female student.
- Planning of studies in Vietnam by Canadian students.
- Further promotion of awareness of the project's activities through mass media. Publication of a book entitled "Waste-Econ in Sustainable Development" in English.

(Pham Kien Thiet)

2. Meeting of the Project-Coordinating Committee, 25 May 2002, Hanoi

At the meeting, members of the Project Steering Committee listened to reports and discussed the following issues:

- a. The project's performance progress and results achieved from the Third National Planning Conference, including:
 - Performance progress of pilot research projects, with attention to the pilot research project performance progress reports and result based management approach.
 - Development of new joint research initiatives within the project framework.
 - Training activities of the project.
 - Preparation of a national workshop on Waste-Econ curriculum framework.
 - Publication of the 4th Newsletter.
- b. Planning of the project's activities to be implemented until the end of June 2002.

(Pham Kien Thiet)

3. A Workshop on “The Role of Women in Waste Economy”

Involvement of women in all the Waste-Econ activities has become an important indicator of the project's performance. A workshop on “The Role of Women in Waste Economy” was held in Da Nang on 21 February 2002. Nearly 40 participants attended the workshop from Canada, India, the Netherlands, Cambodia, and northern, central and southern Vietnam. The participants included waste-economics researchers, instructors, and managers, female representatives from pilot research projects and training courses; and representatives from University of Da Nang, Department of Science, Technology and the Environment of Da Nang City; Women's Unions of Hai Phong and Da Nang cities and members from the Waste-Econ Project Steering Committee.

Reports and papers presented at the workshop focused on the role and contributions that women can play and make in waste economy; constraints and obstacles and even pressures that women and children are often confronted with in this domain, and relevant policy solutions proposed to raising public awareness of the role of women and children in waste economy; supporting policies to help enable women to improve their knowledge of environmental sanitation and the efficiency of their performance in the field of waste economy.

At the workshop, international experiences of the role of women in waste management in general and the waste economy in particular were presented and are useful and practical for Vietnam. Other useful topics included waste separation at source, establishment of women's waste economy organizations, and women's health education.

Discussions focused on how to promote awareness and a greater understanding of the role of women and their burdens in the waste economy among communities including managers at all levels. Various solutions to improve the efficiency of women's waste economy performance became the focus of discussion, and among them, the education policy solutions

that are crucial to the transfer of relevant knowledge of environmental protection in small and medium sized business.

(Nguyen Thi Anh Thu)

4. A two-week training course on the waste economy held in Vinh City, Nghe An province

A two-week Waste-Econ training course was delivered within the framework of the Waste-Econ Project for central Vietnam and selected northern provinces from 6 to 17 May 2002 at Vinh City, Nghe An province. The training course was attended by 28 participants (including seven women making up 25%) who hold at least a university level diploma. The participants work in environment related sectors, including University of Vinh City, Nghe An provincial Department of Science, technology and the Environment (DoSTE), provincial URENCO, and District People's Committees, and departments of health, and education and training, provincial Women's Union, and local industries.

Knowledge transferred at the training course included waste management planning and technologies; industrial waste management; community health, education and waste economics; Waste-Econ principles and theories; waste management economics; and Waste-Econ research methodologies. Field trips were organized for the participants to visit Cau Duoc Cement Factory, Dong Vinh dumpsite, Nghi Yen sanitary landfill, Vinh City, Cua Lo township, and pesticide treatment area at Cua Lo beach.

A group of instructors including Prof. Dr. Nguyen Hieu Nhue, Dr. Tran Duc Ha, Dr. Hoang Xuan Long, Dr. Nguyen Thi Anh Thu, and Mr. Ho Quang Thanh, deputy director of Nghe An provincial DoSTE attended. Lectures were adjusted to be appropriate to provincial conditions. Logistics work for the training course was well arranged.

The participants were encouraged to participate in open discussions and as a result, they contributed many new ideas and initiatives to the lectures. At the end of the course, the participants presented reports of training results in six groups and the group reports were presented to an evaluation panel. The outstanding group won an award. Training course certificates were granted to all 28 participants. They concluded that knowledge transferred and exchanged in the course is useful to their work.

(Tran Hieu Nhue)

5. Pilot Research Projects

5.1 Organic Waste Pilot Project Bai Chay beach, Ha Long City

The Center for Environmental Engineering of Towns and Industrial Areas (CEETIA) worked together with the Waste-Econ project office and CIDA representatives to launch an evaluation mission to evaluate a pilot project performance progress in the study area (6 March, 2002). The team held a round table meeting with local representatives (from Ha Long Bay Management Board, Quang Ninh provincial DoSTE, and Department of Tourism) to discuss the current local status of environmental protection, solid waste management, and their pilot research project.

On the occasion of World Environment Day, 5 June, a seminar on “Strengthening public participatory waste management at Bai Chay beach, Halong Bay City” was held by the pilot project in collaboration with the provincial DoSTE on 3 June, 2002.

The seminar was attended by 32 participants from Quang Ninh Tourism Company, Local Newspaper, Ha Long Bay Management Board, Bai Chay Harbor Management Board, the People’s Committee of Bai Chay ward, and representatives from Cai Lan, Cai Dam, Bai Chay residential areas, provincial Women’s Union, Youth Union, Association of Veterans, HERITAGE and Hon Gai hotels, and others.

The attendees actively discussed the current status of solid waste management in the resort and contributed constructive comments to a public participatory solid waste management plan. Relevant proposals made by CEETIA received support from the participants, and principles have been agreed upon to implement the plan at the resort.

At the same time, a campaign of floating waste collection was launched by the pilot research project in collaboration with the Ha Long Bay Management Board as an action to celebrate World Environment Day. Households of the floating village Van Gia (40 minutes by boat from Bai Chay beach) were provided with plastic containers and hand nets to collect wastes on the seawater surface. Local people and school children actively participated in this event.

Within the pilot research project framework, Hanoi’s current state of solid and liquid waste management was also presented to Canadian students from University of Toronto. CIDA technical guidance for processing of microbial fertilizer from organic wastes discharged from hotels is being translated into Vietnamese for demonstration purpose.

(Tran Hieu Nhue)

5.2 Municipal Solid Waste Landfill Pilot Project in Da Nang

The project objectives have been adjusted in favor of social aspects rather than technical ones. Results of 800 sociological questionnaires indicate that in Da Nang, there are few families involved in waste sorting given the low price of recoverable materials. Most of the respondents said that they are ready to separate waste if it could generate income. Therefore, the best solution to waste sorting at source is to strengthen recoverable materials purchase or reduce waste collection fees for those households who actively sort their waste.

Regarding microbial fertilizer processing, most respondents are less educated and don’t understand the value of organic matter, but they do regret it when food is disposed of as waste. They can cooperate with URENCO to separate organic wastes for microbial fertilizer production. Local Women and Youth unions need to be entrusted to promote education and awareness of solid waste management as most of women and children are in charge of waste disposal at home.

The project has organized two study tours to Singapore and Thailand in order to study their solid waste management systems, treatment technologies, landfills, and exchange experience at the tertiary level of teaching of waste economics.

In Singapore, the study tour members worked with Singapore counterparts from the Tuas South Waste Incineration Center, The Land to Sea Waste Transfer Station, and studied

several waste treatment technologies and exchanged relevant experience with the Nanyang Engineering University and the National University of Singapore.

In Thailand, the study tour team exchanged experience in landfill construction and management and microbial fertilizer processing in Bangkok, Nongkhaem, and Onnuch. The team made a working visit to the Phu Ket waste incineration center, Pataya solid waste management agency, and exchanged experience with the Environmental technology Faculty, Chulalongkorn University.

(Tran Van Nam)

5.3 Gender outreach pilot project for women involved in waste collection and recycling in Trang Minh ward, Hai Phong city

In April 2002, the pilot project organized a survey in order to identify needs in seed capital borrowing, and organized a selection of candidate borrowers. Donors include CIDA and Canadian GEMS of Hope. So far, four training courses on credit –savings management mechanisms have been delivered to 130 registered borrowers prior to disbursement.

From 17 to 18 April 2002, the pilot project implemented the first disbursement of VND 168 million for 112 female borrowers or VND 1.5 million per person. After two months, there are 135 poor women in Trang Minh ward who have borrowed money as seed capital to buy and collect more recoverable materials on the basis of monthly repayment of capital, interest and savings. After two pay back periods, 100% of borrowers have fully repaid their capital, interest and savings as scheduled. All borrowers are divided into five centers, each center has three groups and each group includes ten borrowers. All centers meet monthly in order to collect capital, interest, disburse savings for new borrowers and exchange information and work experience among the members.

At monthly meeting of the centers, Central Women's Union work together with the project to monitor and inspect the pilot project activities in Hai Phong. The Central Union has completed a compilation of the project's manual on training, management and operation. The document has been translated and submitted to GEMS of Hope.

In the next six months, the project will continue to implement activities of revolving fund management; organize surveys and initial examinations of local markets, the borrowers' life and knowledge; and promotional education and communication of health protection and environmental sanitation among women in Trang Minh ward.

(Cao Hong Van)

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

The first six-month performance progress review has been organized by the Pilot Project in collaboration with two communes, Nam Son and Bac Son. In the review, results produced by the project were evaluated, and a work plan of activities for the second six months was developed. Following are the results of the pilot project:

Intensive training courses have been delivered to local poor households' children with failing grades who were heading to be dropouts from the Nam Son Lower Secondary School. One hundred per cent of these children have improved their educational capacity from weak to

average levels as evaluated, and some have gained an above average level. The pilot project has supported four intensive sources organized by the Nam Son Lower Secondary School and this initiative has been highly appreciated by local communities.

In May 2002, the pilot project, in collaboration with the Nam Son Lower Secondary School, organized a contest called “An Ever Green Planet” which was launched by the National Environment Agency and the Ministry of Education and Training. The contest has attracted the participation of 1000 local children and will end in October 2002.

In June 2002, the pilot project organized a study tour of eight members to study experiences in solid waste collection and treatment in Thailand. The study tour team worked with the Azuttaya provincial Technology and Environment Authority and other relevant sectors, and made a working visit to local landfills and studied the current status of solid waste collection at Pattaya. Productive information and particularly experience in community-based awareness of environmental protection, administrative measures (fines), and Thailand’s solid waste collection capacity, have benefited the study tour members.

An outline of the 2003 pilot project development is being completed.

(Pham Bang)

B. INVESTIGATIONS - RESEARCH

1. Research by Canadian Students in Vietnam

In 2002, seven Canadian students from the University of Toronto studied various relevant issues within the framework of the Waste-Econ Project in Vietnam:

(1) Nupur Malaviya continued her Master degree study on “Industrial Waste Management in Vietnam - the case of Ho-Chi-Minh City”. Her study took place in Ho-Chi-Minh City and was closely linked to “the Industrial Waste Pilot Project in Ho-Chi-Minh City”.

(2) Yogendra Shakya continued his Ph.D. degree study: “Comparing rural credit programs in Vietnam and Nepal”. The study was conducted in Hanoi, Vinh Phuc and Hai Phong through local surveys and interviews with relevant individuals and organizations. The study was closely linked to the Gender Outreach Pilot Project for Women Involved in Waste Collection and Recycling in Truong Minh ward, Hai Phong city.

(3) Carrie Mitchell is carrying out a Master degree study on “Cleaner Production Planning in Ho-Chi-Minh City- a seafood processing case study”. The study was completed in Hanoi and Ho-Chi-Minh City through interviews with relevant individuals, enterprises and institutions. The study was closely associated with “the Industrial Waste Pilot Project in Ho-Chi-Minh City”.

(4) Laura McNally is carrying out her Master degree study on “Water Resource Conservation in Landfill Location and Construction Planning in Vietnam- the case of MSW Landfill Pilot Project in Da Nang”. The study was carried out in Hanoi, Phu Tho, Da Nang and Ho-Chi-Minh City, and it was closely linked to the MSW Landfill Pilot Project in Da Nang.

(5) David Richardson is working on his Master degree study on “Community Based Solid Waste Management Systems in Hanoi”. The study was mainly carried out in Hanoi and was closely associated with a pilot project on strengthening environmental economics teaching capacity implemented by the National Economics University of Hanoi.

(6) Esther Rootham began her study on issues relating to assistance given to a pilot research project and then, further study on a research theme of “Environmental Management of the Fishery Sector in Vietnam”. Her study has mainly been implemented in Hanoi and Ho-Chi-Minh City.

(7) Curtis Puncher is carrying out his study on various issues relating to “Factors that influence waste compositions, informal waste recycling and reuse systems, and influence of the tourist sector on waste composition and generation” . His study started with data collection and analysis of socio-economic indicators, the study is closely linked to the pilot research projects in Ha Long and Da Nang.

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

(Tang The Cuong)

2. Study Results gained by two Vietnamese Students in Canada

The Waste-Econ Project sent three Vietnamese students to Canada to study post-graduate (Ph.D. and Master) courses in September 2001 at University of Toronto (U of T), they include:

(1) Nguyen Van Ha who is working on his Ph.D. degree study on “ Social fund- a policy solution to sustainable development of paper craft villages in Vietnam” at the Faculty of Forestry. To date, his Ph.D. research outline has been completed and admitted by U of T’s Scientific Council.

(2) Nguyen Quang Tuan began his Master degree study and now continues his Ph.D. degree study on “ Community concerns of solid waste landfill construction in Vietnam” at the Faculty of Geography, U of T. His Ph.D. study outline has been formally admitted by U of T.

(3) Luu Duc Cuong is studying for a Master degree course on “ Solid Waste Landfill Location in Vietnam: Site selection process, criteria and administrative structures- a case study of the MSW Landfill Pilot Project in Da Nang” at the Environmental Engineering school, Civil Engineering Faculty, U of T.

All three Vietnamese students have returned home for two to four months to collect relevant data and information for furthering their studies.

(Tang The Cuong)

3. Research reports by participants to the two-week training course held in Vinh city, 6-17 May 2002

Participants have completed six research themes within the framework of the two-week Waste-Econ training course. These research themes are closely associated with local urgent issues facing their provinces. Analytical methods applied by six research groups have been based on the Waste-Econ approach.

A report on “An initial adoption of cleaner production (CP) to a paper making stage in Song Lam Paper Mill, Nge An province” was prepared by a research group including Le Van Hung, Nguyen Thi Tien, Nguyen Hong Thai, Hoang Van Hung and Hoang Van Khang. The report presents a CP adoption to the papermaking stage and analysis of technological efficiencies in terms of economic and environmental benefits. The authors have produced recommendations on a wide scale CP adoption into local industries.

“A study and suggestion of waste management measures at Nghe An Brewery Corporation” is the research topic of a report presented by a research group comprising Nguyen Lan Anh, Hoang Duc Lac, Nguyen Hoang Nguyen and Nguyen Xuan Tung. The report presents the current status of the corporation’s production process and describes its impacts on the environment. Various solutions to environmental impact mitigation and waste reduction, as well as CP adoption are presented in the report.

A report entitled “A study and suggestions of solutions to environmental pollution minimization in the mining of limestone as raw materials to Hoang Mai Cement Plant” was made by a research group including Ho Sy Gioi, La The Thinh, Cao Thi To Chau, Vu Duy Can, and Duong Ngoc Toan. The report also presents impact assessment results of various wastes namely, waste mud, waste stone powder and dust, solid waste, noise, vibration, and others, on local ambient environment and the health of workers at the mining site under the control of the corporation.

Several solutions to minimization and control of air pollutants, storm water runoffs, domestic wastewater treatment, environmental quality monitoring and other solutions to raise environmental protection costs were suggested

“Waste-Econ with a conventional solid waste treatment technology in a residential area (city and/or township)” is a research theme of a group including Le Van Chien, Nguyen Dac Tam, Hoang Trong Nghia, Hoang Quy Hien, and Hoang Thi Kim Oanh.

Theoretical and practical rationales of biogas technology, biogas technology assessment based on views of socio-economic and environmental sustainability, and its comparison with other (land filling and incineration) technologies, and municipal solid waste (MSW) treatment modeling are the focus of the research. The report concludes that the biogas technology application is theoretically and practically feasible into the waste treatment process in Vietnam, and this would be more advantageous than other technologies being applied in the country.

“Several waste management solutions proposed for Tate & Lyle Cane Sugar Joint Venture, Nghe An province” is a research theme carried out by a research group including Phan Anh Tuan, Ho Dinh De, Tran Kim Khanh, Nguyen Thi Oanh, and Thinh Thi Thiet. The report presents the current status of environmental pollution caused by the Company’s activities and proposes various solutions to re-use sugar cane biogases, filtered mud, molasses, wastewater recycling, adoption of ISO standards, and other relevant policies.

A report on “MSW and their impacts on the environmental quality at Cua Lo Township” was made by a research group comprising of Nguyen Thi Hanh, Le Van Hoa, Mai Van Loi, and Nguyen Hong Quang. The report describes local solid waste generation sources, the current status of Cua Lo’s MSW management and emerging issues. Recommendations suggested by the group include strengthening the local URENCO’s technical capacity by improving its relevant facilities, adoption of community based waste collection, encouragement of biological solid waste treatment, and promotion of public education and awareness of MSW management.

(Nguyen Thi Anh Thu)

4. Investigation-Research by Researchers & News

4.1 Waste-Econ activities implemented by the Center for Urban and Rural Environment Research and Planning

The Center for Urban and Rural Environment Research and Planning, Ministry of Construction (MOC) is one of the Vietnamese partners to the Waste-Econ Project. From August 2000 to December 2001, in addition to the project outputs, the center has implemented many waste economy related scientific research activities, including:

- (1) A feasibility study of industrial waste treatment area at Tram Than commune, Phu Ninh district, Phu Tho province (2000-01). This is one of the first industrial waste management projects in Vietnam.
- (2) A feasibility study of an existing landfill expansion at Sam Son township, Thanh Hoa province (2001) with the goal of expanding its lifetime.
- (3) A comprehensive solid waste and environmental sanitation management planning project at King Hung Temple (2000). This is a national historical relic where separation of solid wastes at the source would first be implemented to improve the quality of landscape and tourism.
- (4) An Inter-urban MSW management planning project in Bac Ninh province (2001-02) to propose relevant solutions to MSW planning of nine urban centers within Bac Ninh province on the basis of Waste-Econ approach.

Solid waste is one among 12 areas given priority by the Center. Having participated as a partner in the Waste-Econ Project for one and half year, the Center’s solid waste research capacity has been improved.

(Luu Duc Hai)

4.2 Waste Economy in Bangalore, India

Bangalore is the sixth large city in India and has a population of five million, of which, an urban population accounts for 4.1 million. This is a city of diverse small, medium and large industries, surrounded by intensive agriculture. Despite this, Bangalore is capable of recovering and recycling most of the solid waste volumes generated by the city.

Bangalore has around 25,000 waste pickers (most of them are women and children), and about 3000-4000 junk buyers of waste newspapers, plastics, glass, metals, clothing, and other

items, comprising a local waste recovery and recycling network. The network provides various input materials for two glass recycling plants, four waste paper recycling plants, eight waste aluminum recycling workshops, 3050-5000 plastics producers, and many other mixed waste recycling industries. Employees working in hotels and offices collect waste foods for pig and poultry rearing. Local farmers collect wastes from dumpsites or convince waste truck drivers to transport them to their farms to use as field and crop fertilizers.

Street pickers travel freely and collect recoverable wastes everywhere in the city because there is no formal dumpsite. Scavengers usually earn an income of around 50-60 Rupees per day higher than unskilled workers working in small sized enterprises who receive a payment of 40 Rs. It is estimated that a collector collects 40 kg of waste per day; this means that a volume of around 1.2 to 1,6 ton of wastes are collected daily or 400-500.000 tons per year. This has created a larger number of jobs for “voluntary” waste separating persons (people and shop owners) at source, or (waste pickers) at nearby waste sources, and transportation of organic wastes to farms for use as fertilizers. In addition, in Bangalore there is a mixed fertilizer plant producing approximately 20 tons of mixed fertilizer per day by processing of 50-100 tons of waste.

Although not all Indian cities could be able to perfectly recover and recycle wastes as Bangalore does, the city’s scale of waste economy has become a good example for other cities to learn from. However, the scale would have been more efficient unless a favorable marketplace for recoverable materials is available to form waste separation and trade traditions. While recoverable material collection rate and its control level vary between local scavengers and pickers, their contributions to economic and environmental benefits are undeniable.

M.N (Science & Life, 12, 2001)

4.3 A waste fired electric-power plant would be built up in Hanoi?

A proposal has been advanced to build up a waste- to- energy plant in Hanoi. If approved by the Government, it would be the first energy recovery project in Vietnam. According to the proposal, this 20 year BOT (Building, Operation and Transfer) project would be executed by Seduxen-Techsult Corp., Canada and completed in two years at a cost of USD 23 million. The proposed electric-power plant operates a controlled gas oxidization technology with a continuous combustion in primary and secondary chambers. It is estimated that a power output of 15 MW per day would be produced from 150 tonnes of solid wastes.

Although the project proposal has received support from many local scientists, there are concerns about complete removal of toxic emissions such as dioxins and sulfur, and the cost-effectiveness of the project as cost of electricity produced from the incineration process is higher than conventional practices. The plant may be built up at Nam Son landfill, Hanoi. It would contribute to reduction in pollution level and increase the lifetime of the landfill.

(Science & Life, 24-27 Dec.2001)

C. EXCHANGE OF VIEWS & EXPERIENCES

Canadian University Level Curriculum on Waste Economy (continued)

Engineering Economics and Decision Making (A lecture of Prof. P.H. Byer, Department of Civil Engineering, University of Toronto).

Course Description:

The incorporation of economic and non-monetary considerations for making decisions about public and private sector engineering systems. Topics include rational decision-making; cost concepts; microeconomic analysis, including production, supply and demand functions; time value of money and engineering economics; treatment of risk and uncertainty; and public project evaluation techniques including benefit-cost and multi-objective analyses of alternatives.

Contents of the above lecture are based on the book entitled "Principles of Engineering Economic Analysis", authors: J.A. White, M.H. Agee, and K.E. Case. Aiming reference to topics related to the lecture, the following is the structure of the referenced book.

Chapter 1: Introduction

Chapter 2: Cost Concepts

Chapter 3: Time Value of Money Operations

Chapter 4: Measuring the Worth of Investments

Chapter 5: Comparison of Alternatives

Chapter 6: Depreciation and Income Tax Considerations

Chapter 7: Economic Analysis of Projects in the Public Sector

Chapter 8: Break-Even, Sensitivity and Risk Analyses

Chapter 9: Decision Models.

(Philip Byer)

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