

Country Questionnaire Prior to the Senior Officials Meeting
On the 3R Initiative
-THAILAND

[Country Questionnaire Survey]

1. Major developments regarding the strategies, policies and activities on the 3R_s in Thailand since the Ministerial Conference on the 3R_s (April 2005)

1.1 National Integrated Wastes Management Plan

The plan is developed for integrated solid waste and waste water management. In details, 3R_s program is high hierarchy of management practices including promotion of source reduction and separation, waste stream recovery for composting, material and energy uses. Biogas, heat and electricity generated in the processes can be used in waste water treatment plant. During year 2006-2009, it is expected that solid waste shall be properly managed at least 2 times of the current practice.

1.2 Legislative development for good practices of waste management

- Law for Promotion of Community Generated Hazardous Waste Management

The law aims to promote extended producer responsibility, especially for e-wastes. Producers are responsible for waste recovery and disposal through market mechanisms such as deposit-refund system and disposal fees. At present, the law has been drafted and being reviewed by relevant stakeholders.

- Amendment of the Public Health Act A.E. 1992

The Public Health Act A.E. 1992 is a major act for solid waste management in Thailand. However, the act does not support good practices of waste management. Thus, it is necessary to be reviewed and amended by concerning issues of waste recycling activities and improvement of solid waste management facilities.

1.3 Promotion for public participation in the 3R_s program.

The Ministry of Natural Resources and Environment has launched intensive campaign for public involvement in environmental management. Many 3R_s programs have been implementing such as reduction of plastic and foam used in department stores,

voluntary programs for packaging waste recovery, pilot projects for municipal waste recycling practices, and capacity building for local government.

1.4 Waste recovery rate increase

Since 1994, public involvement in solid waste management is significantly important due to increased problems associated with solid wastes. The 3R_s programs have been then introducing through campaign, seminar, training and guideline. As a result, recovery rate of municipal solid waste is approximately increased from 7% in 1994 to 22% in 2005. With continued 3R_s program promotions, the recovery rate is expected to increase to 30% by 2009. Impacts of 3R_s implementation are showed in Appendix.

2. Good Practices on 3R_s

2.1 National Level

(a) Take – back program for end-of-life products

- Used lead-acid batteries recycling program has initiated due to seriously illegal recycling and disposal of the batteries in environment. The program aims to encourage the recycling of used lead-acid batteries through the tax incentive together with the environmental and operational monitoring. At present, the program can promote the recovery of used lead-acid batteries up to 85%.

- Take back program on end-of-life mobile phones including batteries and packaging has initiated in order to recycle or dispose of them in the environmental sound manner. The programs are aiming at encouraging customers to take back the used or end-of-life mobile phones and their accessories, such as batteries and packaging wastes to the collection points provided by manufacturers or relevant stakeholders, such as network providers in case of mobile phones and theirs batteries, on the voluntary basis. At present, there are 26 stakeholders participated in the project including network providers, manufacturers, NGOs and waste disposal service company.

(b) Capacity Building on the 3Rs

Central government has provided technical support as well as financial support for local government in order to improve the existing waste management system in terms of more reliable and more environmental friendly system. Waste recycling programs are introduced in pilot areas to generate community-based recycling models for nearby municipalities. Moreover, eco-design strategies, standards for waste containers and products produced from recycled material are published to promote 3R_s practices.

2.2 Local Level

(a) Initiative of recycling-oriented society

Collaboration among all stakeholders; central government, local administration, and private sector, is a key function to promote the recycling-oriented society in the view of in-house segregation, reuse, and recycling. Moreover, it can promote local wisdoms and enhance public participations. As a result, there are over 15 community-intellectual recycling activities has been created at present. Some examples of the activities are waste donation, school- bank of recyclable waste, informal waste trading, community buy-back centre, organic waste composting and bio-extraction.

(b) Community Participation on the 3R.

As a result of national policy and goal on the 3Rs, many local communities have initiated their waste management programs toward the 3Rs. Processes of public education and participation is dramatically promoted. Activities, related to waste separation and recovery are conducted in all regions of Thailand. At present, there are over 200 communities that have waste recycling programs. Result of the 3Rs program implementation showed that those communities can reduce waste up to 30-50% before final disposal.

2.3 Industrial and NGOs Cooperation.

(a) Industrial Waste Exchange Program

Currently, pilot project on Waste Exchange Programs are being conducted in Thailand to encourage recycling in industries. This program is based on the premise that one industry's raw material. Companies match their waste disposal and their raw material needs through a computerized database, and subsequently exchange their wastes. For the supplier of the waste, these types of transactions avoid disposal costs, while the user, the purchase of used raw materials can be done at lower prices than that of new materials and can be reduced the energy needed during the manufacturing processes. As of 2005, 450 industries registered on the waste exchange database established by the Ministry of Industry and the Thailand Environment Institute.

(b) Thailand Green Purchasing Network

Government, industrial sectors and NGOs established Thailand Green Purchasing Network, which intends to promote the green supply chain not only the demand but also the supply in the Thai market through the information exchange on green product, green manufacturers and green criteria. Currently, criteria for government green procurement is being developed to provide purchasing guideline for green products and services such as printing and writing papers, toner cartridges, fluorescent lamps, cleaning and hotel services.

2.4 International Cooperation

(a) Green Manufacturing Technical Assistance Program

The program has initiated to integrate and extend its current capacity on cleaner technology and material technology to Life Cycle Assessment (LCA), eco-design, recycling & green materials technology for supporting Thai industries to achieve green manufacturing and design. The program is performed by Thai government in cooperation with Government of Japan through Green Partnership Plan during 2002-2004. The outputs and outcomes of the program include human resource development on basic to advance LCA and eco-design, demonstration project on development of eco-compressor, framework and roadmap for the development of green products and services in Thailand.

(b) Fluorescent Lamp Partnership Program

With the purpose of enhancing the recycling and proper waste management in Thailand, Government of Thailand in cooperation with Government of Japan through Green Partnership Plan has started the *Pilot Project on the Recycling of Fluorescent Lamp in Thailand in 2004*. At the first phase, the project paid the attention to the scenarios of fluorescent lamp waste management by focusing on recycling. The next phase, starting in 2005-2006, is an extended study of the first phase, which aims to establish pilot provinces, recyclers, and waste processors.

(c) Construction and Demolition Waste Management

The Construction and demolition waste management system is the cooperation project between GTZ and the Pollution Control Department, which aims to develop a guideline and criteria for managing the construction and demolition waste. At present, Technical guideline on this issue has developed. This guideline will provide stakeholders the methodology for recycling and reuse the construction and demolition waste as well as for preventing the illegal dump and related environmental impacts.

(d) Packaging Waste Management

In order to minimize impacts of trade-related environment from packaging wastes, a long-term plan for packaging waste management must be prepared. However, based on the technical, environmental, and socio-economic aspects, the packaging waste management becomes the difficult tasks. Thus, the GTZ cooperation on packaging wastes is recently developed to support Thai's counterpart on the packaging wastes management in accordance with policies and measures issued by developed countries.

3R_s Key Success Factors

Factor	Key to success	Obstacles
1. Policy and Goal	<p><u>Central government</u></p> <ul style="list-style-type: none"> • Set up broad policy, goal and target for 3R_s initiatives. • Promote 3R_s-related policy measure, develop master and action plan and promote 3R_s activities. <p><u>Local government</u></p> <ul style="list-style-type: none"> • Develop their policy goal and plan in accordance with those of central government. • Implement the 3R_s plan under support of central government in budget technical knowledge and other resources. 	<ul style="list-style-type: none"> • Require large and liable data base on waste management system. • Controversy of 3R_s implementation and current waste management practices. • Lacks of concerns in 3R_s programs due to limitations of budget, knowledge and legislative system.
2. Legislative system	<ul style="list-style-type: none"> • Review and revise existing laws to reduce conflicts of authority • Develop basic law and regulation to support the 3R_s based on concepts of. <ul style="list-style-type: none"> - Resource conservation and recovery. - Extended producer responsibility. - Promotion of material reuse and recycling. • Conduct public involvement process for related stakeholders during development of the regulation 	<ul style="list-style-type: none"> • Require long process of development and enforcement • Impact of law enforcement on industrial sectors and overall socio- economic system • Conflict between environmental regulation and economic growth for developing countries

3R_s Key Success Factors

Factor	Key to success	Obstacles
3. Cooperation among stakeholders	<ul style="list-style-type: none"> • Promote partnership among local government, private sector, academia, NGOs and consumers. • Share information among stakeholders by using environmental education and awareness programs through media such as TV, newspaper, posters, public service announcement, community publicity and newsletter. • Support partnership-based actions on the 3Rs such as: <p><u>Central government</u></p> <ul style="list-style-type: none"> - Support in development of infrastructures - Provide various incentives <p><u>Local government</u></p> <ul style="list-style-type: none"> - Coordinate among stakeholders - Facilitate 3Rs activities - Issue related local regulations to support the 3Rs <p><u>Private sector</u></p> <ul style="list-style-type: none"> - Implement the 3R_s-related industry - Development innovative technology for the 3Rs <p><u>Consumers/informal sector</u></p> <ul style="list-style-type: none"> - Cooperate as committee in community waste management - Participate in the 3R_s programs - Evaluate and monitor the programs <p><u>NGOs</u></p> <ul style="list-style-type: none"> - Promote campaign for the 3Rs program - Participate in the 3R_s activities - Support community works 	<ul style="list-style-type: none"> • Require time and cost for promotion of partnership. • Lacks of community interest due to conventional solid waste management • Conflicts among organizations due to different objectives and politic issues • Need improvement role and responsibility from command and control to cooperation of all stakeholders

3R_s Key Success Factors

Factor	Key to success	Obstacles
<p>4. Promotion of research and technology</p>	<ul style="list-style-type: none"> • Identify research and technology required for the 3R_s promotion including : <ul style="list-style-type: none"> - Clean technology/cleaner production - Eco-design technologies/strategies - LCA approach and material flow analysis - Cost-effective waste recovery technologies - Material substitution technologies • Promote research and technology by applying incentives such as financial incentives, subsidy, market promotion, tax exemption and funding program. • Support knowledge for 3R_s technology such as development of 3R_s research network, establishment of 3R_s technology centre, 3R_s best practice data base development and 3R_s technology information distribution. 	<ul style="list-style-type: none"> • Limitation of expertise on the 3R_s fields. • Require sophisticated techniques and tools to support the research. • Lack of cooperation in 3R_s research due to concerns of productivity changes.

3R_s Key Success Factors

Factor	Key to success	Obstacles
5. International cooperation	<ul style="list-style-type: none"> • Define clear issues of cooperation such as <ul style="list-style-type: none"> - 3R_s best practice sharing - Joint research and technology development - Knowledge and technology transfer - Reduction of barriers to the international flow of goods and materials • Consider practical patterns of cooperation such as government or ministerial level, regional cooperation, city-to-city cooperation and individual organization • Promote international cooperation : <ul style="list-style-type: none"> - Establish international committee for 3R_s cooperation with members from each country - Set up 3R_s information center to promote best practices of 3R_s activities, related researches and technologies - Conduct international conference on innovative 3R_s research and technology or 3R_s best practices - Set up long-term framework or plan for cooperation program 	<ul style="list-style-type: none"> • Ineffective cooperation in many cases due to complication and difference of socio-economic system and waste management practices • Lacks of international barrier reduction due to pollution and domestic recycling impacts of imported wastes, recyclable materials and off-standard or near-end-of life products • Require improvement of regulation, waste management practice, and related policy to promote the cooperation • Lacks sufficient waste management capabilities in developing countries

Appendix

Impact of the 3R_s Implementation

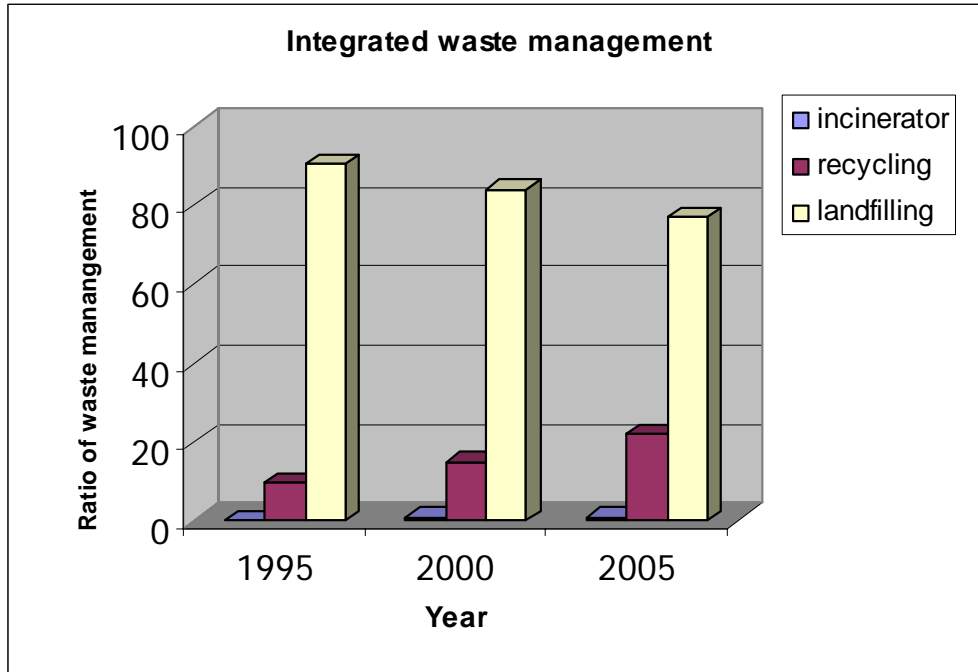


Figure 1 Integrated waste management

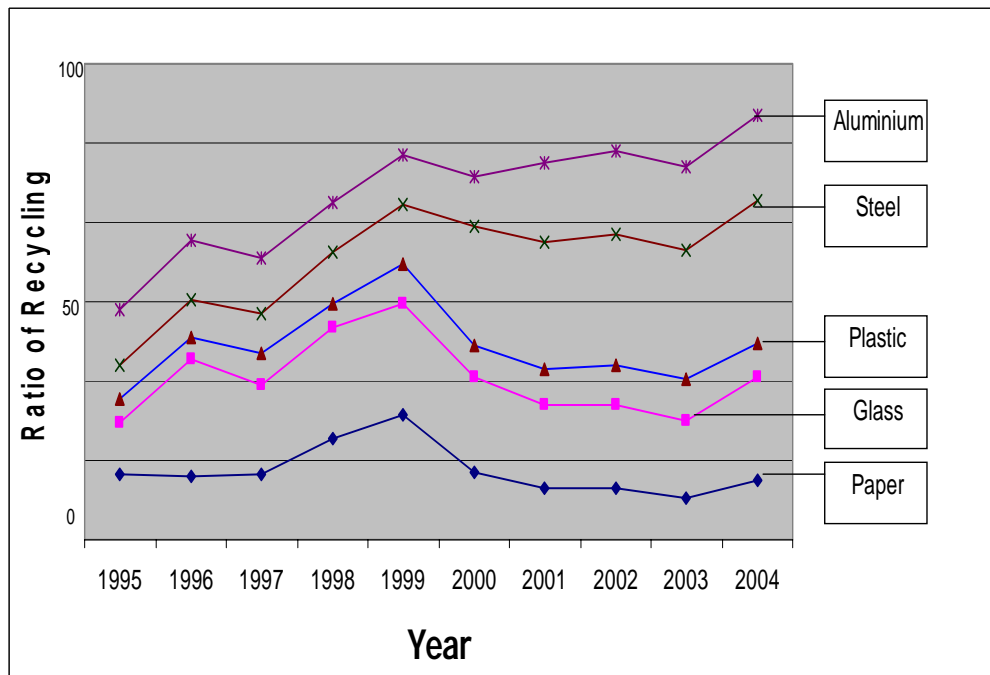


Figure 2 Waste recycling in industrial sectors

The Showcase of 3R_s Good Practices

Date : _____
 Country/Organization : Thailand/Pollution Control Department

No.	Name of the practice	Summary of the practice	Impact	Key for Success
<p><u>National</u></p> <p>1.</p>	<p>National Integrated Waste Management Plan</p>	<p>The plan is developed for integrated solid waste and waste water management. In details, 3R_s program is high hierarchy of management practices including promotion of source reduction and separation, waste stream recovery for composting, material and energy uses. Biogas, heat and electricity generated in the processes can be used in waste water treatment plant.</p>	<p>Many municipalities cooperate in solid waste management, called cluster. A set of solid waste management is prepared for the clusters focusing on 3Rs before final disposal. During year 2006-2009, it is expected that solid waste shall be properly managed at least 2 times of the current practice.</p>	<p>Integrated techniques such as GIS and technology research are applied in the planning processes. A clear information must be distributed to local administrative organizations. A pilot area for project implementation is necessary before conducting waste management scheme over the country.</p>

The Showcase of 3R_s Good Practices

Date : _____

Country/Organization : Thailand/Pollution Control Department

No.	Name of the practice	Summary of the practice	Impact	Key for Success
2	Take – back program for end-of-life products	- Used lead-acid batteries recycling program has initiated due to seriously illegal recycling and dispose of the batteries in environment. The program aims to encourage the recycling of used lead-acid batteries through the tax incentive together with the environmental and operational monitoring.	At present, the program can promote the recovery of used lead-acid batteries up to 85%. This can significantly reduce long-term environmental impacts from improper management of the batteries.	The program is continuously promoted. Financial incentive for used battery return is important issue
		- Take back program on end-of-life mobile phones including batteries and packaging has initiated in order to recycle or dispose of them in the environmental sound manner. The programs are aiming at encouraging customers to take back the used or end-of-life mobile phones and their accessories, such as batteries and packaging wastes to the collection points provided by manufacturers or relevant stakeholders, such as network providers in case of mobile phones and theirs batteries, on the voluntary basis.	At present, there are 26 stakeholders participated in the project including network providers, manufacturers, NGOs and waste disposal service company.	Cooperation of government and stakeholder as network for environmental protection is principle. Promotion for images and environmental friendly business will encourage program participation.

The Showcase of 3R_s Good Practices

Date : _____

Country/Organization : Thailand/Pollution Control Department

No.	Name of the practice	Summary of the practice	Impact	Key for Success
<p><u>Local</u> 1</p>	<p>Initiative of recycling-oriented society</p>	<p>Collaboration among all stakeholders; central government, local administration, and private sector, is a key function to promote the recycling-oriented society in the view of in-house segregation, reuse, and recycling. In addition, promoting local wisdoms and enhancing public participations.</p>	<p>There are over 15 community-intellectual recycling activities has created at present. They include, for example, waste donation, in school bank of recyclable waste, informal waste trading, community buy-back centre, organic waste composting and bio-extraction.</p>	<p>Public education and participation is continuously promoted. Central and local governments facilitate community needs.</p>
<p>2</p>	<p>Community Participation on the 3R.</p>	<p>As a result of national policy and goal on the 3Rs, many local communities have initiated their waste management programs toward the 3Rs. Processes of public education and participation is dramatically promoted. Activities related to waste separation and recoveries are conducted in all regions of Thailand.</p>	<p>At present, there are over 200 communities that have waste recycling programs. Result of the 3Rs program implementation showed that some municipalities can reduce waste up to 30-50% before final disposal.</p>	<p>Capacity building on the 3Rs to local government is vital. It is necessary to conduct the pilot projects in all regions as illustrating project sites.</p>

The Showcase of 3R_s Good Practices

Date : _____
Country/Organization : Thailand/Pollution Control Department

No.	Name of the practice	Summary of the practice	Impact	Key for Success
<p><u>Industrial and NGOs cooperation</u> 1</p>	<p>Industrial Waste Exchange Program</p>	<p>Currently, pilot project on Waste Exchange Programs are being conducted in Thailand to encourage recycling in industries. This program is based on the premise that one industry's raw material. Companies match their waste disposal and their raw material needs through a computerized database, and subsequently exchange their wastes. For the supplier of the waste, these types of transactions avoid disposal costs, while the user, the purchase of used raw materials can be done at lower prices than that of new materials and can be reduced the energy needed during the manufacturing processes.</p>	<p>As of 2005, 450 industries had registered on the waste exchange database established by the Ministry of Industry and the Thailand Environment Institute. The program increases awareness in resource recovery in industrial sector.</p>	<p>Waste exchange information must be updated and promoted. Program monitoring and evaluation is necessary to prevent illegal waste disposal. Research and technology on waste utilization must be concerned.</p>
<p>2</p>	<p>Thailand Green Purchasing Network</p>	<p>Government, industrial sectors and NGOs, established Thailand Green Purchasing Network, which intends to promote the green supply chain not only the demand but also the supply in the Thai market through the information exchange on green product, green manufacturers and green criteria. It is implemented in accordance with the World summit on Sustainable Development Commitment on Sustainable Consumption and Production.</p>	<p>The network promotes green and environmental friendly products uses for consumers, government, industrial and commercial sectors. Currently, criteria for government green procurement is being developed as purchasing guideline for green products and services such as printing and writing papers, toner cartridges, fluorescent lams, cleaning and hotel services.</p>	<p>Government policy on green procurement encourages green marketability. Related information publication is necessary. Incentives are needed to promote market mechanism.</p>