

PD-ABM-538

NATIONAL WASTE MINIMIZATION PROGRAM STATUS AND WORKING DOCUMENT

Prepared by

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A Project of the United States Agency for International Development and the Government of Sri Lanka

Background

The U.S. Agency for International Development's (USAID's) Natural Resources and Environmental Policy Project (NAREPP) and the World Bank/United Nations Development Programme's Metropolitan Environmental Improvement Programme (MEIP) developed a joint program to provide technical assistance and training for Efficient Pollution Reduction through Environmental Audit (EPREA) in key industries in Sri Lanka.

The first stage of EPREA was conducted by NAREPP alone through a sub-consultant's agreement with Malcolm Pirnie, Inc. The first stage consisted of 6 environmental audits of industries and the training of 6 local Sri Lankan consultants, government research laboratory personnel, and university lecturers. In planning the second stage of the environmental audit program, the joint NAREPP-MEIP team built upon the earlier experience. By joining forces with MEIP and the World Environment Center (supported by the U.S.-Asia Environmental Partnership), NAREPP was able to put a more sustainable structure to the environmental audits program which consisted of:

- Introductory Workshop on Efficient Pollution Reduction through Environmental Audits (EPREA);
- Waste Minimization Institution Building by the WEC Institutional Development Team (Minnesota Mission);
- Factory Assessments by WEC experts in 6 industry sectors with training of Sri Lanka laboratory and consulting staff;
- Pollution Control and Waste Minimization Workshops by WEC experts in 6 industry sectors for industry, consultants, university staff, and government agencies;
- Planning Workshop for National Waste Minimization Programme; and
- National Symposium on Pollution Prevention and Control and U.S. Environmental Technology Catalogue Exhibition.

Through these activities, NAREPP and MEIP were able to put some structure to the National Waste Minimization Programme (NWMP), however, considerable work remains to be done. This report will try to gather together the information collected to date regarding the programs that are in place and the other needs to be considered as the NWMP is developed further. The document will ask questions that need to be answered as a part of planning for the future structure of the NWMP.

What are the objectives and goals of a NWMP?

The objectives and goals of the NWMP need to be clearly stated. The WB Preappraisal

Mission Aide Mémoire states the following objectives which could be adopted by the NWMP:

"The objectives of a waste minimization program are:

- (a) save money by reducing waste treatment and disposal costs, raw material purchases and other operating costs;
- (b) protect public and worker health and safety by reducing the amount of waste to which this sector is exposed; and
- (c) protect the environment."

The NWMP should seek to meet these objectives by providing financial and technical assistance to industry such that they voluntarily implement waste minimization measures.

How should waste minimization be defined?

A clear definition of waste minimization will be crucial to the NWMP because waste minimization can mean different things to different people. How it is defined can significantly affect the assistance that can be given. For example, developing countries often use older, less-efficient processes to make their products. Therefore, by purchasing newer, more efficient equipment, pollution is often reduced. Is this waste minimization? yes and no. The question arises whether this kind of process improvement can qualify for financial assistance such as grants and loans. This issue needs to be further researched and defined.

What are the components of a NWMP?

-Financial Assistance

Financial assistance in the form of loans and grants are a crucial part of the assistance that industries need to implement waste minimization at their factories. Loans and grants will be required to conduct waste minimization assessments as well as to make modifications to processes and purchase equipment.

-Technical Assistance

Technical assistance consists of:

- Local and overseas education/training of industry, private consultants and laboratories, government research laboratories, and universities.
- Dissemination of technical information such as resources, suppliers, research, etc. through newsletters and library resources.

-Regulatory/Policy linkages

In addition to the "carrot" provided by Financial and Technical Assistance, a NWMP should be able to use a regulatory "stick" to persuade industries to implement waste minimization as a means of reducing pollution. Regulatory agencies will need to make referrals of industry to the NWMP a part of their assistance to industries. Other issues facing the NWMP are policies of the Government of Sri Lanka such as tariffs and duties that affect purchase of pollution reduction equipment, etc. These types of policies can affect the implementation of waste minimization by industry.

-Twinning

Other considerations for the NWMP in Sri Lanka include "twinning" arrangements with organizations in the U.S. Twinning arrangements will be complicated by questions of funding, what is the nature of the exchange, what are the benefits to both parties, and how long should the arrangement last for.

Who are the players in waste minimization in Sri Lanka today?

There are many sources and recipients of assistance in Sri Lanka today. They can be divided into donors, government, non-governmental organizations, and the private sector all of which will be involved in different aspects of the NWMP. Specific institutions that have already participated in the earlier EPREA activities are listed below. These and other organizations and people have expressed interest in continuing their involvement.

-Donors

- USAID - NAREPP, USAEP, WEC
- WB/UNDP - MEIP
- UNIDO
- NORAD
- Dutch
- Japanese

-Government of Sri Lanka

- Ministries/agencies
 - BOI/GCEC
 - CEA
 - CMC
 - Industrial Development Board

-Universities

- Peredeniya
- Moratuwa - Center for Textiles, Civil and Chemical Engineering
- Colombo - Dept. of Chemistry

-Research Laboratories

CISIR

NBRO

-Non-governmental Organizations

-Chambers of Commerce and Industries

CNCI

-Environmental groups

EFL

CRDS - "Green Audits" program

-Private sector

-Financial institutions

NDB

DFCC

-Industries

Metal Finishing

Leather Tanning

Paints and Coatings

Food Processing

Textiles/garments

Wood-floor Manufacturing

Acid manufacturing

Metal works

Industry Associations

-Private consultants/laboratories

The following Table - 1 describes the activities of the donor organizations as they stand to date. Table - 2 describes known Government and Non-governmental organization activities that may be relevant to a NWMP. It appears that the program is sufficiently complex and involved, that some umbrella coordinating body (National Waste Minimization Center) needs to be established within the NWMP to ensure that duplication of effort is minimized and the program meets its objectives and goals.

Table - 1: Donor Activities in Waste Minimization

ACTIVITY	USAID-NAREPP	WB/UNDP - MEIP	UNIDO	NORAD	Dutch	Japanese	OTHERS
FINANCE							
Loans and Grants		PCAF					Germans?
TECHNICAL/ MANAGEMENT ASSISTANCE							
Training/WM cell at labs & universities	yes - WEC experts program	yes - CISIR, Univ of Moratuwa (Textile and Clothing Tech, Chem and Civil Engr.) see aide memoire	yes - factory specific demonstration projects				
Training of industries and chambers	yes - WEC experts program		yes - factory specific demonstration projects				
Training of private consultants	yes - WEC experts program		yes - factory specific demonstration projects				
Training of EU at financial institutions	yes - WEC experts program	yes - NDB & DFCC see aide memoire					
Technical Resources - newsletter, library, supplier info.							
Demonstration Projects			yes - textiles, distillation, and metal finishing				

ACTIVITY	USAID-NAREPP	WB/UNDP - MEIP	UNIDO	NORAD	Dutch	Japanese	OTHERS
Overseas Training	yes - through USETI		yes				
National Environment Center/NWMP Development	yes - support for development of NWMP through NAREPP					yes-possible funding for National Environment Center	
REGULATORY/ POLICY LINKAGES							
General Policy Issues, Pollution fees, groundwater use fees, etc.	yes - support activities at CEA and MEPA	yes - see Action Sheets, T1, E1, S2, S9, S11, S12, S13 from ERM/MEIP Working Paper					
Laboratory and Consultant Accreditation		yes - through MEIP program					
Laboratory Strengthening		yes - through support of Cabinet Memo on Promotion of Private Env'l Monitoring and Testing Services					
TWINNING							
	yes - Minnesota Mission Report	yes - Minnesota Mission Report					

Table - 2: Government, NGO, and Private-Sector Activities and Potential Contacts in Waste Minimization

ACTIVITY	GOVERNMENT	NGO	PRIVATE-SECTOR
FINANCE			
Loans and Grants			yes - NDB, DFCC with administration of PCAF
TECHNICAL/ MANAGEMENT ASSISTANCE			
Training/WM cell at labs & universities	CISIR, CEA, NBRO University of Moratuwa have had some WM experience, will require more		
Training of industries and chambers	may be able to use Ministry of Industries to outreach to industries	CNCI is interested in environmental issues, may be the best source for outreach to industries (contact at CNCI is Sudanta Abeyakoon)	possible opportunities for outreach through industry-specific organizations (e.g. leather tanners)
Training of private consultants		CRDS has "Green Audits" training class, needs to be coordinated?	consultants require training and access to technical info.
Training of EU at financial institutions			yes - NDB & DFCC see aide memoire
Training of Equipment Suppliers			No contact has yet been made with suppliers, but will be important part of approach

ACTIVITY	GOVERNMENT	NGO	PRIVATE-SECTOR
<p>Technical Resources - newsletter, library, supplier info.</p>	<p>Ministry of Industries has database called INDMIN with access to local technology and international databases. Network access includes NDB, BOI, DFCC, CISIR, and EDB</p> <p>CISIR has library that is making changes to improve accessibility to industry, requires membership fee for use</p> <p>CEA is supposed to have a Hazardous Materials Database</p> <p>NBRO publishes environmental guidelines series, improve waste min aspects and improve dissemination. also conducts air quality monitoring.</p>	<p>Sri Lanka Committee on Toxic Chemical Control mentioned by Dr. Mathes.</p>	

ACTIVITY	GOVERNMENT	NGO	PRIVATE-SECTOR
REGULATORY/ POLICY LINKAGES			
Duties/Tariff Regulations	MEPA, MIST activities?	yes - see Action Sheets, T1, E1, S2, S9, S11, S12, S13 from ERM/MEIP Working Paper	
Laboratory Strengthening	Cabinet Memo on Promotion of Private Env'l Monitoring and Testing Services		
TWINNING			
	Interest exists but should be linked to NWMC rather than specific line agency.		

SHORT-TERM PLAN (as excerpted from my 23 November memo to Sumith Pilapitiya - Attachment A)

Overall, it appears that a reasonable short-term approach for the program is to set-up the Clearinghouse/Center. Initially, it would serve these functions. Preliminary assignments for possible entities that could take over the functions are identified.

CISIR

-Library/Information (since they have an existing technical library)

Either a newly formed NWMC (Center or Clearinghouse) or at an existing entity such as the Environmental Unit of the NDB or DFCC

-Newsletter

-Training Clearinghouse:local and overseas (e.g. with WEC experts, and overseas training for trainers)

-Conduct Awareness training in coordination with CNCI

-Financing alternatives

-coordination of donor activities

-coordination of financial institutions and chambers and association activities

Conducting these types of activities would probably require 1-2 full-time staff and 1 administrative assistant.

MEPA/MPPI

-regulatory framework and policy measures such as pollution fees.

These activities can be started on a small scale, such as only for the highest polluting industries, then expanded to others as the programs develop further.

LONG-TERM PLAN

Once the basic activities are established and functioning, other activities that the Clearinghouse/Center could add in the future would be:

-coordinate internships

-administer awards for pollution reduction in different industry groups (e.g. small, medium, large, export vs. domestic, etc.)

-administer small grants program

-prepare videos

If pollution fees are collected, some of these fees can be used to fund the NWMC and give it financial independence. It should then be run as an NGO with a governing body from entities like NDB, DFCC, CNCI, CEA, MEPA, and other industry associations. It may require donor assistance to start the programs, but would be essentially self-sufficient after it has been established.

FINAL NOTES

As a closing note, I wanted to include some of thoughts that I've gleaned from Terry Foecke during our fax discussions regarding the development of this program.

OBSERVATIONS BY TERRY FOECKE ON INSTITUTION BUILDING

1. Technical information is most important for "getting in the door"; non-technical information is most important for getting implementation.
2. Stand-alone promotion and assistance efforts are expensive.
3. Building relationships is slow work but worth the effort; a 2 -3 year time-frame is typical before a program is accepted and begins to show results.
4. Use existing initiatives and motivators to promote pollution prevention instead of trying to create new ones.
5. Never send a non-expert to a company unless he/she is backed by an expert somewhere.

REFERENCES FOR NWMP DEVELOPMENT

1. Updated NEAP (in process)
2. NAREPP 94/95 Workplan (in process)
3. Minnesota Mission Report (with WEC)
4. Aide Memoire from WB/CEIP Preappraisal Mission, Nov/Dec 93
5. Mission Report from WB/CEIP Preappraisal Mission, Nov/Dec 93
6. ERM/MEIP Working Document on Urban Industrial Pollution Management, Dec 93
7. Memo from Sachi Itagaki to Sumith Pilapitiya on 23 November 1993 on notes from 17 November 1993 Planning Workshop (Attachment A).

ATTACHMENT A
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MEMORANDUM

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DATE : 23 November 1993
TO : Sumith Pilapitiya, National Programme Coordinator, MEIP
FROM : Sachiko Itagaki, Consultant
SUBJECT : Notes from 17 November 1993 planning workshop on National Waste
Minimization Programme

Attached are the two overheads that David sketched out at the workshop. I had worked with the group on Technical Assistance/Information/Education. Industries were not well represented at this workshop and the group I was in consisted mainly of University professors.

Our discussion focussed on the following:

TRAINING:

Those who need training in waste minimization:
-Universities/labs (e.g. CISIR)
-Industries
-Private consultants and laboratories
-Regulatory/finance institutions

A need to strengthen the industrial links to institutions like Universities was discussed: A possible role for CNCI? Also can use final-year university students to do special projects with industry (internship program). One project could be a video in an industry that could be used to educate others in the industry.

The universities thought that to train university personnel is to train the trainers. Then, once the university faculty were trained, they could not only offer courses to their undergraduate/graduate students but also offer short courses to working professionals and industrialists. A model to follow for this may be the textiles course at University of Moratuwa. [How much credibility does the textiles course have with the industry?] In addition, universities could offer testing services and consultancies for a fee. Over time, these functions may revert to the private sector consultants and laboratories.

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The main drawback to training university faculty is that the university faculty may not have enough time to effectively play to two audiences, namely industry and students. Without a firm contract with the universities, it may be difficult to ensure that the university faculty fulfill their end of the commitment. • Another obstacle to the use of universities is that industries have been reluctant to allow universities into factories; this may be another area that CNCI can get involved. University faculty may never be able to get the experience and depth that someone who works in the industry has. The universities also may not be tuned in to availability of equipment, etc. which an industrialist or consultant may have.

Therefore, it will also be important to get industry personnel involved in training. They have credibility, experience and the in-depth know how that cannot be obtained by training. Their main problem is not having the time to do this kind of outreach. Perhaps through the CNCI, we can get some of their members more involved in the transfer of information that is not threatening to their processes.

Other ideas related to training that were raised include:

- curriculum development in waste min. through an association with University of Minnesota which is supposed to have already developed some curriculum for university students.

- initiatives are needed to link university departments together as well as linking different Sri Lankan universities (e.g. Moratuwa and Colombo). It was suggested that NAREPP may be able to facilitate this process. This would enhance exchange of information between departments and between universities and build awareness as well.

The training to the university personnel could be provided locally, through the use of foreign waste-min experts such as the WEC experts. Their value is great because they work in industries, rather than in academia. However, they will need assistance (such as from WRITAR) in how to convey what they know into a logical course with field visits or videos.

International training opportunities in waste min. also exist. Programs in Asia should first be explored because of the lower travel costs. Within the U.S. association can be made with groups like WRITAR, the Minnesota Office of Waste Management, and University of Minnesota. There are no doubt other programs in the U.S. such as US-ETI which we could take advantage of. It could be the role of the National Waste Minimization Clearinghouse/Center to make available these training opportunities. The appropriate training needs to be identified; for example, it appears that US-ETI focusses on the governmental/NGO which would develop a waste min program, not on specific technical issues related to a particular industry. It seems that anyone who participates in an overseas training, must be prepared to share that information with others in a formal setting such as workshop and newsletter article.

It may be worthwhile to charge a nominal fee for the training (especially for industries) because of the commitment that it implies.

INFORMATION:

There is a lot of information that needs to be disseminated to industry, private consultants/laboratories, universities, financial institutions and to the regulatory sector on pollution prevention and waste min. This would probably be most effectively done through a newsletter from the National Waste Minimization Clearinghouse/Center. It would have to have a large mailing list.

In addition, suggestions were made regarding the information that needs to be made available in a library(ies). There should be a core group of technical references such as Merck's Index, and other basic references and texts. These can be made available to all of the technical centers (i.e. CISIR, University of Moratuwa:Chem Engr, Civil Engr, textiles) Then, there will be specific texts and journals that may be available at specific centers depending on their specialty industrial sector. Eventually, these libraries will be networked by computer; initially, they can have paper/disk copies of the references available at each library.

There is also a lot of information available on CD-ROM which will be a more cost-effective way to make up-to-date data available than dial-up database services. It appears that through the NDB, BOI, DFCC,etc network mentioned during the meeting, there will be dial-up capabilities at those locations. Provision will have to be made to update that information.

CISIR may be a good repository for information because of their existing Technical Services Library. They have recently expanded hours to 6 p.m. to make it more accessible to the industries. CISIR charges a nominal fee to use the library, this would be a good idea in the future in order to make it self-sustaining.

Other general suggestions that have been made with regard to the program are:

Awards:

An award that could be given to industries in the small, medium, and large categories would be a motivator for change. It could involve nominal cash prizes, good publicity, and a plaque. It should be given from a respected organization like the Clearinghouse/Center. It would need an evaluation/selection committee and some administration.

More Awareness training:

There is still a lot of need for awareness training within all of the sectors. Within industries, there will need to programs for workers as well as for management. Awareness of pollution, in general, should be made available to school children as well. There is definitely room for improvement on getting industry more actively involved. It probably needs to be tied into the CNCI and other industry organizations.

Grant program:

There may be room for a small grants program which could fund university/laboratory and industry research to be written up and presented. It could also serve to fund other small projects that could help the Clearinghouse/program but may not get done otherwise.

SHORT-TERM ACTION PLAN:

Overall, it appears that a reasonable short-term approach for the program is to set-up the Clearinghouse/Center. Initially, it would serve these functions:

- Library/Information
- Newsletter
- Training Clearinghouse:local and overseas (e.g. with WEC experts, and overseas training for trainers)
- Conduct Awareness training with coordination with CNCI
- Financing alternatives
- regulatory framework

- coordination of donor activities
- coordination of financial institutions and chambers and association activities

This would probably require 1-2 full-time staff and 1 administrative assistant

Other functions the Clearinghouse/Center could add in the future would be:

- coordinate internships
- administer award
- administer small grants program
- prepare videos