



Country Presentation
for
2nd Meeting of the Regional 3R Forum

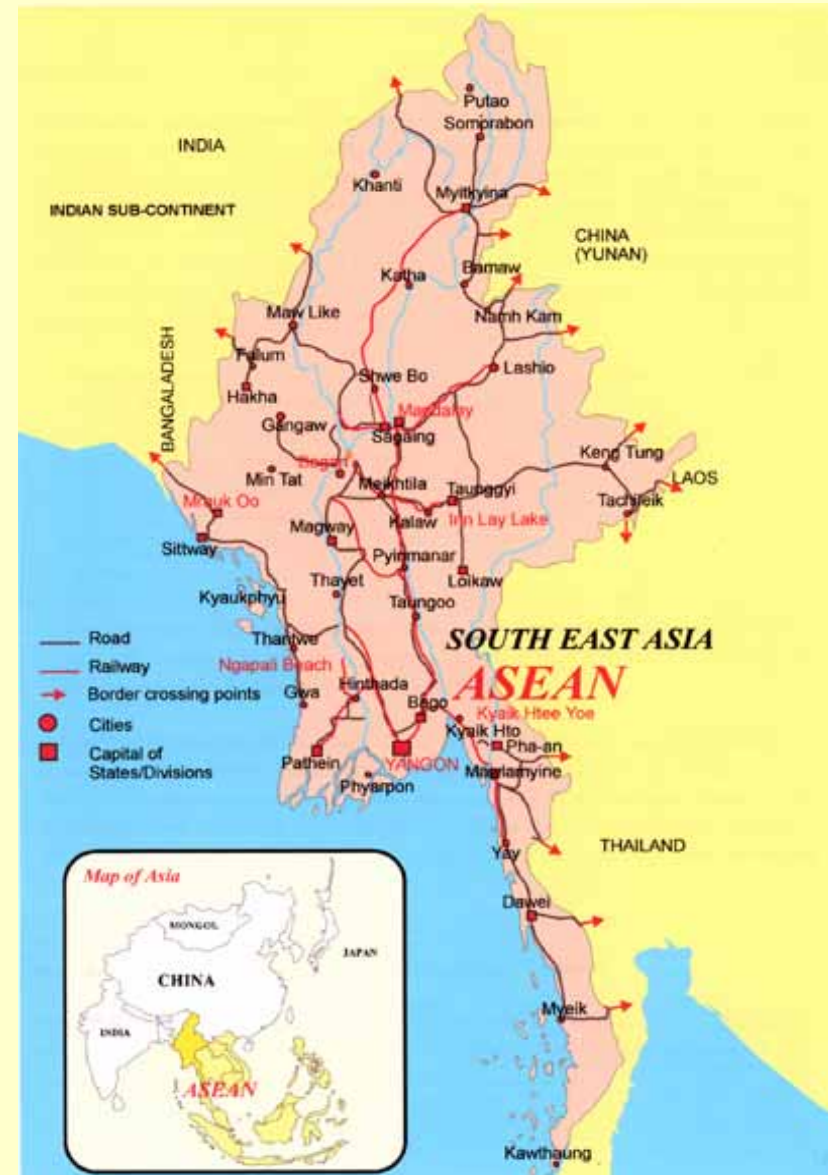
Presented by

Myanmar

4 - 6 October 2010

Country Profile : Myanmar

- Myanmar is the largest country in South-East Asia with a total land area of 677,000 sq.km
- 936 km from east to west
- 2,051 km from north to south
- Total coastline : 2,832 km.
- Population : 57.5 million
- Climate : Tropical monsoon
- Religion : Buddhism(90%), Islam, Christian, Hindus
- National Races : 135



Part I

Municipal Solid Waste

Municipal solid waste in Myanmar is composed mainly of organic waste (73%) followed by paper/cardboard (18%), wood (4%), plastic and textile (2% each) and others (1%).



Solid waste generated in Yangon City

<u>Year</u>	<u>Generated amount</u>
1990	0.40 kg/cap/day
1995	0.48 kg/cap/day
2000	0.52 kg/cap/day
2001	0.39 kg/cap/day
2003	0.312 kg/cap/day
2006	0.287 kg/cap/day
2009	0.285 kg/cap/day

Solid Waste Generation in Mandalay

- ❖ In **Mandalay**, it is estimated as the constant rate of **0.53 kg.**

Note: Total waste generation **cannot be expected decreasing, because population density** in Yangon and Mandalay areas are high with 19,500 and 7,600 persons per square mile respectively while 222 persons per square mile for the union level.

Solid Waste Sources and % Contribution

<u>Sources of solid waste</u>	<u>Percent Contribution</u>
1. Kitchen	60
2. Market	15
3. Hotel	2
4. Garden	5
5. Commercial	10
6. Others	8

Industrial Wastes

- ❖ Hazardous Waste
- ❖ Toxic Waste
- ❖ Radioactive Wastes
- ❖ Chemical Waste
- ❖ Sewages



Industrial Sector in Myanmar

- **Ministry of Industry No. 1**
 - **Ministry of Industry No. 2**
- } **State-owned Industries**
- **18 Industrial Zones**
 - **Private Industries**

In the Industrial Sector the government has concentrated industrial enterprises into industrial zones in order to minimize pollution of other municipal areas, rationalize the provision and use of electricity and transport of raw materials and finished goods, and facilitate the enforcement of laws regulating the occupational health of workers, prevention of industrial accidents and the use of toxic chemicals in production.

Part II

Solid Waste Management Programme

Myanmar Agenda 21 (1997) identified four programme areas in Environmental Quality Management and Enhancement.

One of the four main objectives is

“To provide a strategy and implementation plans for the changing and strengthening of values, knowledge, technologies and institutions with respect to environmental protection and development”

The general aim of Myanmar Agenda 21 is to facilitate the integration of environmental and sustainable development considerations into the daily activities and decisions of individuals, households, communities, corporations and the government.

Solid Waste Management Organizations

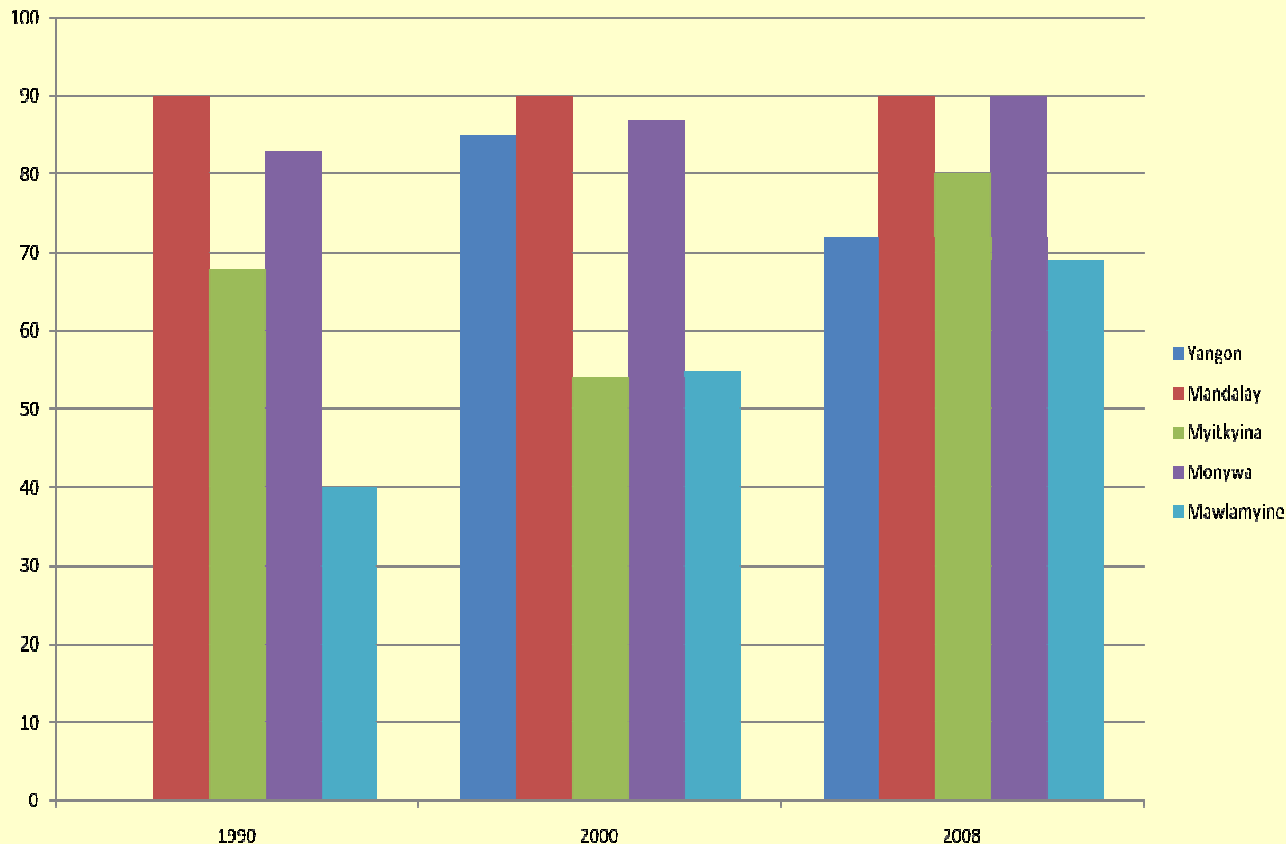
- ❖ **In Myanmar, the City Development Committees of Nay Pyi Taw, Yangon and Mandalay, and in other parts of the country**
- ❖ **Township Development Committees under the Department of Development Affairs**
- ❖ **Ministry of Progress of Border Area Development and National Races Development Affairs**

Waste Related Laws

- ❖ The Yangon Water-work Act (1885)
- ❖ The City of Yangon Municipal Act (1922)
- ❖ The Water Power Act (1927)
- ❖ The Underground Water Act (1930)
- ❖ The City of Yangon Development Law (1990)
- ❖ The Development Law (1993)
- ❖ The City of Mandalay Development Law (2002)
- ❖ The Nay Pyi Taw Development Law (2009)
- ❖ Beside these, the City and Township Development Committees promulgated the solid waste disposal and collection by-law as its measure for legal basis at local level.

Domestic Waste Collection

Yangon, Mandalay and in other large towns of Myitkyina, Monywa and Mawlamyine , waste collecting capacity increased from 70%, 80% and 40% in 1990 to 80%, 90% and 70% in 2008 respectively.





Submerge to deep well process,
Designated
By concrete well and sealed type.

Incineration process



**Hospital waste are separately collected and disposed
by cleaning department.**

EXPIRED MEDICINE INCINERATION



Incineration
process



Submerge to deep Well
process



3Rs Activities in Myanmar



Plastic Waste (Plastic shopping bags)



Plastic Container

Sorting



Washing



Extruding



Pellet

Pressing



3Rs Activities in Myanmar



Plastic Container



Plastic Resin



Pre Heating



Plastic Containers

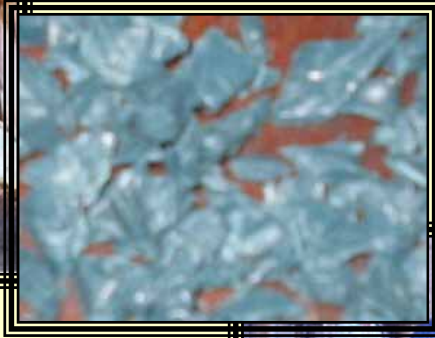
Recycled Containers production



3Rs Activities in Myanmar



Washing



Plastic shopping bags Pellet



Recycled pipe production

Water Pipes 1/2"Ø, 3/4"Ø, 1"Ø

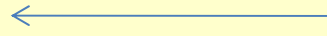


3Rs Activities in Myanmar

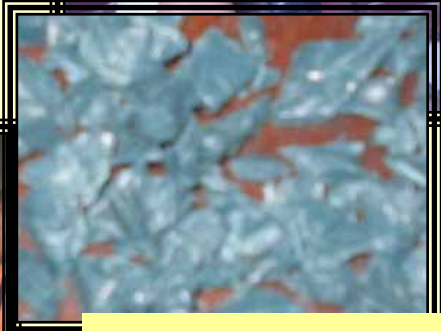
Plastic Container



Extruding



Pressing

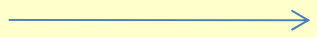


Plastic shopping bags melted blocks

Washing



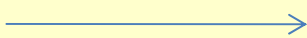
Sorting



3Rs Activities in Myanmar



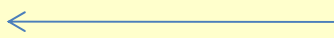
PVC waste



Mayor Inspection at site.



PVC Pipes
6"Ø, 4"Ø, 3"Ø, 2"Ø,



PVC Pipe production



Recycling and composting in Yangon City

- Some materials such as paper, plastic, glass etc., are collected separately from municipal waste and recycled.
- Many small sized paper mills, glass factories, plastic industries and so on are producing recycled products.
- At the year of 2010, 300 ton/day of waste are planned to be recycled in Yangon city.

Composting

- ✚ Municipal Solid Waste disposed in Mandalay city is 302.4 ton/day.
- ✚ Composting has introduced in Myanmar since 1999 and 3-Rs is scale stage.

Objectives

- ✚ To reduce the amount of waste ends up in land fill.
- ✚ To reduce the burden of the waste disposal.
- ✚ To provide natural fertilizer for farmers with low cost.
- ✚ To reduce the impact of chemical fertilizer.

Issues and Problems

- ❖ **At present recycling of municipal solid waste is not fully and systematically developed.**
- ❖ **The budget allocation covers only for routine works.**
- ❖ **Additional financial supports are needed to fulfill advanced and sufficient facilities.**
- ❖ **In fact, City Development Committees and Township Development Committees are struggling against dumping waste disposal amongst constraints of inadequate vehicles, workers and scarce funds.**

Industrial Waste Management

- ❖ Scrap metal from industrial machining processes are divided into ferrous and non ferrous.
- ❖ Iron & steel ferrous scraps are recycled in foundry shop & steel mill, using induction furnace and electric arc furnace.
- ❖ Copper, lead and zinc metals are recovered by refines and secondary smelter and foundry.

Waste Water Treatment Plant for Battery Production (Htone Bo) (30.6.2009)



Waste Water Treatment from Battery (Wet-type Process)

❖ PH of Waste Water 3~4

Lead Content (30~50) mg/L

❖ Batch Type (Treatment)

❖ PH Content of Treatment Water (5.8 ~ 8.6)

❖ Lead Contain 1 ppm

(as Japan Industrial Effective Discharge Standard)

Waste Lubricant

- ❖ Myanmar consume 4.5 million gallons of lubricants annually.
- ❖ Problem for the environment if used lubricant were released into water resources and disposed in land.
- ❖ If used lubricant are recycled it can reduce the depend on base oil derived from crude oil.
- ❖ Recycling machine are needed to refine or purify used oil.

Clean Energy

Electric Vehicle



Alternative Energy



Gel-Type Battery

Energy Efficiency



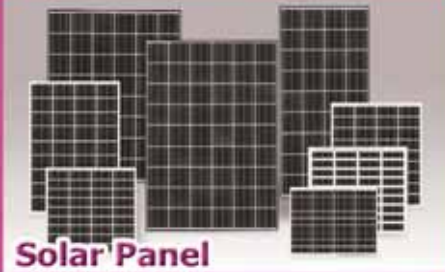
LED Production

Renewable Energy

Solar Street Light



Solar Used Television



Solar Battery charger



Inverter and Charge Controller

Solar Exhibition (23.6.2010)



Promotion of Energy Efficiency Conservation (PROMEEC)

- ❖ With the grants of the Senior Official Meeting of Energy (SOME) & Ministry of Economy, Trade and Industry of Japan (METI) work program
- ❖ Implementation Body cooperated with ASEAN Center for Energy (ACE)

Energy Policy

- To maintain the status of Energy Independence
- To Promote wider use of New and Renewable sources of Energy
- To promote Energy efficiency and Conservation
- To Promote use of Alternative Fuels in Household.

Energy Auditing of PROMEEC in Myanmar

Industries

Year

✦	Mann Petroleum Refinery	November	2001
✦	Kyan Khin Cement Plant	November	2006
✦	Thanlyin Oil Refinery	November	2006
✦	Textile Factory No. (1) Yangon	November	2006
✦	Automobile Factory No. 1 (Yangon)	October	2009
✦	Diesel Engine Factory at Thagaya	December	2010

To be Public Awareness

- **Transferring knowledge by exhibiting Seminar and Workshop**
- **Issuing Technical journal twice - a month for acknowledgement about the Industrial Waste Management and how to preserve the environment**

Electronics Waste

Consumer Electronics such as TVs, Computer equipment and DVD players that contain toxic metals and chemicals are reused and recycled.

- ✚ Necessary to educate people on how to minimize their electronic waste and to purchase eco friendly products only.

Part III

Future Plan

- ❖ To use cheap and cost saving ways to reduce solid waste
- ❖ To encourage people (end user) by the media sector to change their behavior to reuse, reduce and recycle waste and use energy efficiently
- ❖ To improve appropriate technologies for recycling Processes.
- ❖ To change the Raw Material for energy friendly product
- ❖ To continue auditing Waste and house keeping
- ❖ To make process design for less waste
- ❖ To use municipal solid waste for electric power generation with public-private partnership in near future

**Thank you
for your kind attention.**