

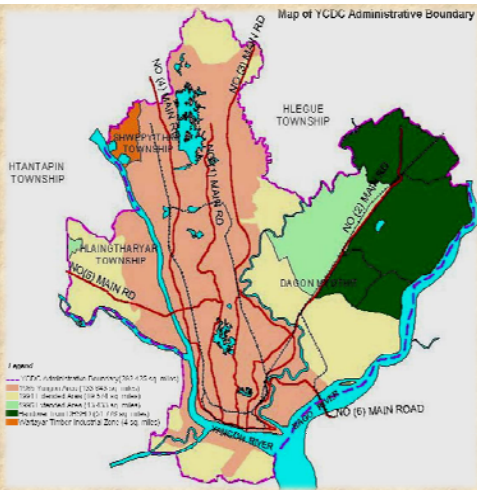
# Management of Solid Waste , Water and Sanitation Systems Toward Environmentally Sustainable Yangon City

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## Towards environmentally Sustainable Cities

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Administrative boundary of Yangon City Development Committee



City Area = 292.426 sq-mile  
Population;= 5.5 Million

## Clean Air: Guidelines on Clean Air

- ❑ The national objectives to control air pollution are:
  - Develop the infrastructure and technical support framework for air quality management.
  - Promote cleaner productions processes
  - Enact a clean air law for air pollution prevention and control.

### Sources of urban air pollution

1. Transportation (Rails and Roads, Air Lines, Marines)
2. Industries (Government and Privates)
3. Frequent fire disasters
4. Emission from waste
5. Emission from domestic fire woods

## Air Quality survey results in Yangon

Site		TSP (ug/m3)	PM10 (ug/m3)	SO2 (ug/m3)	NO2 (ug/m3)
1	April, 2007	342.58	177.69	-	-
	Jan, 2008	143.21	71.75	-	-
2	April, 2007	168.61	68.59	1.14	23.22
	Jan, 2008	118.7	65.3	1.24	22.28
3	April, 2007	127.37	66.95	0.37	28.36
	Jan, 2008	188.66	136.92	0.25	25.42

Parameters - SPM, PM10, SO2 and NO2



TSP = Total Suspended Particulate  
PM10 = Particulate Matter Smaller than 10 microns  
Site 1 = Commercial Area  
Site 2 = Residential Area  
Site 3 = Industrial Area

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## Clean Air: Implementation Plan on Clean Air

- ❑ Emission Control from mobile and stationary sources
- ❑ Substitution of Diesel and Gasoline into cleaner fuels (CNG)
- ❑ Development of wider use of new and renewable sources of energy

### Inspection with equipments



Emission Test

### Existing Solid Waste Management System

- ❑ Disposal of solid waste is the one of pollution sources in Yangon. Therefore, YCDC is planning to the Sustainable Solid Waste Management in the city.
- ❑ Solid waste generated in the city is estimated about 1,540 tons per day.
- ❑ Hospital wastes are separately collected and properly disposed to incinerate and submerge in deep wells.
- ❑ PCCD also collects industrial wastes on call system.



### Clean Land: Guidelines on Solid Waste Management

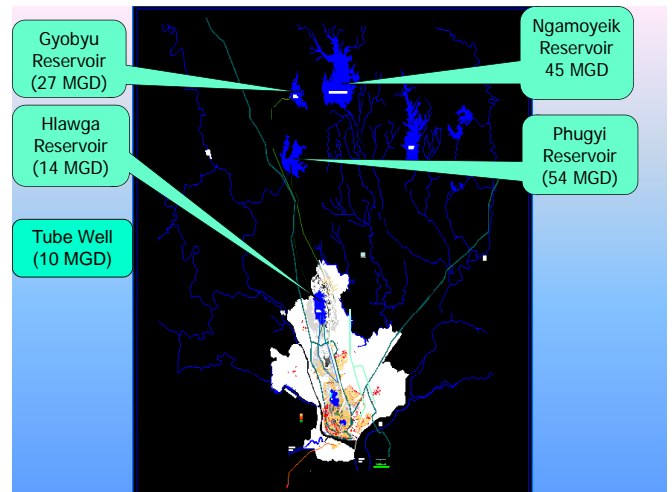
- ❑ Improvement of baseline data and information
- ❑ Promotion of solid waste management on the basis of environmentally sound and sustainable principles
- ❑ Improvement of management and regulatory systems and involve local governments, private and public sectors more effectively in solid waste management efforts.

#### Implementation

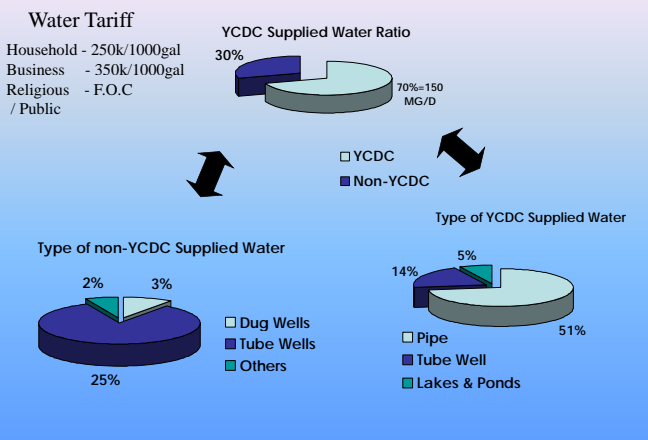
- ❑ Manage and dispose of solid waste and hazardous waste to safeguard public health and Environment
- ❑ Reduce waste generation and disposal
- ❑ Upgrading the transporting facility of solid waste management
- ❑ Maintenance of all aged waste transporting vehicles
- ❑ Upgrading of law enforcement to prevent the illegal disposal
- ❑ Strengthen of public awareness in waste management
- ❑ Emission reduction from waste sectors

### Clean Water: Guidelines Program for Water Quality Management

- ❑ To strengthen the comprehensive water quality management, it has programs in such areas:-
  - Promote institutional and management mechanisms for water quality
  - Develop water quality criteria (to follow WHO standard)
  - Develop waste water treatment facilities



### Yangon water supply



### Yangon water supply project (Ngamoyeik)

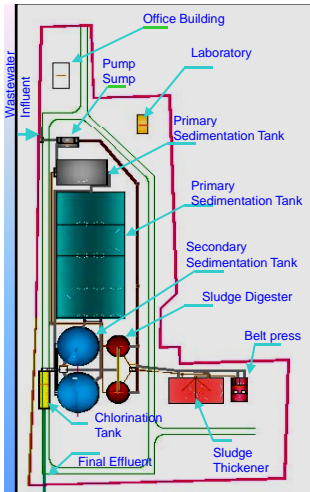


### Clean Water: Implementation Plan

- ❑ Good accessibility and quality of water supply
  - ❖ Construction of disinfection plant
  - ❖ Upgrade of the tube well water supply area
  - ❖ Modification of flat rate system to metering system
  - ❖ Upgrading water supply projects
  - ❖ Regulation of control measures for water losses
  - ❖ Implementation of metering system for all users
  - ❖ Increase the water tariff
  - ❖ Rehabilitation of aged distribution pipes
- ❑ Ensure water sustainability
  - ❖ Improvement of water supply sources and system
  - ❖ Implementation of Hlaing River Water Supply Project
  - ❖ Modification of distribution net works
  - ❖ Control of water quality and losses

### Existing Sewerage System

- ❑ Existing system, conventional sewerage, consists of :-
  - ❖ Gravity sewers
  - ❖ 39 pneumatic ejector stations
  - ❖ Air distribution main
  - ❖ Two sewage force mains and outlet
- ❑ Coverage
  - ❖ 16 sq mile, area of CBD
  - ❖ serves around 350,000 peoples,
  - ❖ 7% of the city population.
- ❑ Daily Volume of sewage disposal - 111840 gal.
- ❑ Major Issues:-
  - ❖ To establish proper treatment process for the existing sewerage system.
  - ❖ To expand and set up the existing sewerage system.
  - ❖ To improve urban sanitation environment in Yangon City Area



### Establishment of Sewage Treatment Plant

#### Design Criteria:

- > Area of Plant - 5.56 acres
- > Design population - 300,000
- > Daily wastewater discharge- - 14775 m3/day
- > BOD influent - 600mg / l
- > BOD effluent - 60 mg / l
- > Suspended solid influent- 700 mg / l
- > Suspended solid effluent- 40 mg / l

### Layout Plan of Sewage Treatment Plant

### Recommendation

- ❑ To research and develop on clean air, clean land, clean water environment and public cleansing boundary.
- ❑ To integrate the action plans for ambient and indoor air quality monitoring and upgrading.
- ❑ To formulate the legislative system for EIA practices and procedures in every establishment of industries.
- ❑ To enhance the techniques on “waste to energy” WTE processes.
- ❑ To promote greater awareness for environment and health .
- ❑ To upgrade the city into more green clean and healthy livable environment.
- ❑ To develop the information systems that can accelerate the implementation frame works of AWGESC, UNFCCC and UNEP.

### Conclusion

- ❑ Public awareness
- ❑ Legislation
- ❑ Cooperation and collaboration

**Thanks**