DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENT
DONRE

SMALL WASTEWATER TREATMENT STATION
FOR
APARTMENT BUILDINGS & HOSPITALS

EXPERT GROUP MEETING
FUKUOKA, JAPAN
30 NOV. – 2 SEPT., 2011
HOCHIMINH CITY - Overview

- **Geographical location:** is a special metropolitan, a mega-center of economy, culture, education, technology, holds an important political spot in the country; an international exchange hub; a multi-sector technological and service center in the region and in South East Asia.

- **Administrative organization:** 24 districts and 322 wards

- **Natural/Urban Area:** 2,095.73/140 km² (center area)

- **Population:** over 9 million (2011), in which 7,165,398 are registered (residents) and nearly 2,000,000 are transient.

- **Residential area:** 1,833,800 residences (houses, villas, apartment buildings – 400,000)
HOCHIMINH CITY - Overview

- Health care:
  + Hospital: 185 (private (small) hospital - 19).
  + District health care centers: 400
  + Private Clinic: 12,000

- Commercial centers:
  + Commercial center: 31
  + Supper market: 97
  + Traditional market: 200
HOCHI MINH CITY - Overview

- Industry:
  + Industrial zone: 11 industrial zones, 03 import-export industrial zones và 01 hi-tech park.
  + Industrial clusters: 30
  + Industrial facilities:
    - 2,000-2,200 large plants (with a capital investment of over 10 billion VND and average no. of workers over 300/yr);
    - 9,000-10,000 small & medium production facilities;
SEWERAGE SYSTEM

- Type of sewerage system: combined system (domestic wastewater, industrial wastewater and storm water) and half separated system (new system);
- Drainage basin: 9;
- Future wastewater treatment plant (master plan): 7 (200,000 – 500,000 m³/d)
- Present wastewater treatment plant: 2
  + Binh Hung Hoa: 30,000 m³/d (biological pond system), ODA project (Denmark)
  + Binh Hung: 141,000 m³/d (aerobic activated sludge process), ODA project (Japan)
SEWERAGE SYSTEM

PROBLEMS

- Dilute wastewater (BOD < 200 mg/L, COD < 300 mg/L);
- Sludge treatment and reuse;
- Energy consumption;
- Air pollution (offensive smell) from sludge treatment building;
SMALL WASTEWATER TREATMENT FOR APARTMENT BUILDINGS & HOSPITAL

- According to Vietnamese Environmental Law & Regulations (2005) all apartment buildings and hospital should have wastewater treatment plants;

- Applied treatment technology: aerobic activated sludge processes (normal) or biological hybrid processes (seldom)

- Problems:
  + Limit of land for wastewater treatment station;
  + Sludge treatment;
  + Operators
QUESTIONS & DISCUSSIONS

1. SMALL SCALE WASTEWATER TREATMENT STATION? WHAT IS THE BEST MODEL?
2. SLUDGE TREATMENT AND REUSE? WHICH IS APPROPRIATE TECHNOLOGY?
THANK YOU