IRBM APPROACH IN WATER QUALITY MANAGEMENT - CASE STUDY IN SUNGAI SELANGOR RIVER BASIN

SELANGOR WATERS MANAGEMENT AUTHORITY (SWMA)/LEMBAGA URUS AIR SELANGOR (LUAS)
22 OCTOBER 2008
DIALOG WEPA
Area: 7,955 km²
Population: 4 million
Districts: Gombak, Hulu Selangor, Kuala Selangor, Kuala Langat, Hulu Langat, Sabak Bernam, Klang, Petaling, Sepang.
SWMA/LUAS OBJECTIVES

➢ To ensure the water resources and environmental surrounding is in a manageable and sustainable condition

➢ To undertake the function of planning, research, facilitator, coordinator, operation, enforcement, supervision in the development of an integrated management of water resources and environment

➢ To provide an environment that is conducive for public and private sector participation in the development, utilization and management of water resources

➢ To create the public awareness and the participation of the public on the importance of water resources
WATER RESOURCES IN SELANGOR

- rivers
- ground waters
- lakes and ponds (alternative resources)
♦ Catchment area - 2,200 km² (28% of the state)

♦ Third largest river basin after Sungai Langat and Sungai Bernam Basin.

♦ Emerges from the foothill of Frasers’s Hill and traverses the northeast region of Selangor for 110 km until the coast.

♦ 3 districts (Gombak, Hulu Selangor and Kuala Selangor) and 19 mukim.

♦ Administration: 3 Local Authority (Selayang Municipal Council, Kuala Selangor dan Hulu Selangor District Council)

♦ Main tributaries are Sg. Sembah, Sg. Kanching, Sg. Kerling, Sg. Rawang, Sg. Tinggi etc.
SG. SELANGOR SUB-BASIN

- Tanjung Karang
- Rawang
- Kuala Selangor
- Sg. Tinggi
- Rantau Panjang
- Hulu Selangor
- Hulu Rening
- Sg. Batang Kali
- Kuala Kubu
- Kerling
♦ Rich in natural and ecological systems
♦ Green & pristine upland environment
♦ Unique flora and fauna
♦ World renowned firefly colony at Kg. Kuantan
♦ Provide recreation to locals, particularly for Selangor and Klang Valley – Sg. Kanching, Sg. Batang Kali
**IRBM Project: Main features**

- **Duration:** 4 years + 9 months (2002 - 2007)
- **3 Components:**
  - Federal - DID HQ
  - Selangor - LUAS (Project Site: Sungai Selangor)
  - Kedah - UPEN / DID Kedah
- **Funding:** Malaysia and Denmark RM 8 million each
- **Objective:** The natural resources of Malaysia are managed on a long-term sustainable basis using an integrated river basin approach to resource management
IRBM IMPLEMENTATION

- Established 7 working groups since 1 October 2003. Animal Husbandry, Land Use, Aquaculture, Water resources, Water Quality, Sand Mining and IRBM WG.

- Draft Final Sungai Selangor Management Plan Workshop, 30 April 2007

- Seminar on Integrated River Basin Management, 3-5 July 2007

- Implementation Phase (2008):
POLICY 1: ENSURE SUFFICIENT WATER

POLICY 2: ENSURE CLEAN WATER

POLICY 3: PROTECT AGAINST FLOOD

POLICY 4: CONSERVE THE FIREFLIES
POLICY 1: Ensure Sufficient Water

ISSUES:

• The Sg. Selangor basin is the most important water resource in the state.

• Provides over 60% of the water used in Klang Valley.

• The demand for water is increasing fast with population growth and economic development.

• Little scope for increasing supply from the Sg. Selangor Basin.
POLICY 1: Ensure Sufficient Water

Selangor will ensure that there is sufficient water for water supply by:

• protecting the resource
• reducing the growth in demand
• making better use of the existing resources
• explore alternative water resources
POLICY 1: Ensure Sufficient Water

STRATEGIES:

1. Increase emphasis on demand management
2. Increase use of groundwater resources
3. Better use of surface water
4. Restore wetlands (esp. peat swamps)
5. Explore additional resources
IMPLEMENTATION:

LICENSING OF WATER ABSTRACTION

- Charging and Licensing of Water Abstraction started on 1 July 2005 for water supply and commercial users.
- Parallel to Section 44 (1)a & 59(1)a, LUAS Enactment 1999. The charge rates are RM 0.01/ m³ for water supply and RM 0.05 /m³ for commercial users.
- The charge will be used to conserve the water resources and environments.

ALTERNATIVE WATER RESOURCES

- ‘Task Force of Alternative Water Resources for Water Supply’ - to identify the suitable lakes, ponds, ex-mining ponds and groundwater to be develop as alternative water resources during water crisis /drought.
POLICY 2: ENSURE CLEAN WATER

ISSUES

- Water quality at the main water intake points to remain at Class II, but it is under pressure, especially from activities in Rawang area.

POLICY

Selangor will ensure clean water for water supply and for the environment by:

- Reduce pollution from existing sources and prevent pollution from new sources.
Source of Pollutions

- Domestic Wastewater ie. public sewage treatment plant, individual septic tank and direct discharge
- Industrial Wastewater
- Wet Markets
- Other urban wastewater ie. restaurant & food stalls etc
- Animal husbandry
- Freshwater Aquaculture
- Solid waste
- Soil Erosion
- Sand mining
WATER QUALITY STATUS

- Sg. Selangor river basin - 10 sub basins
- Class of sub basin based on WQI (2006)
  - 2 sub basin under Class I
  - 5 sub basin under Class II
  - 3 sub basin under Class III
- Three major pollutants
  - High Biochemical Oxygen Demand (BOD)
  - High Ammoniacal Nitrogen
  - High Suspended Solids
POLICY 2: ENSURE CLEAN WATER

STRATEGIES

6. Reduce pollution from industrial wastewater
7. Upgrade sewerage system including sewage treatment plant
8. Reduce pollution from other urban sources
9. Reduce pollution from aquaculture
10. Reduce pollution from animal husbandry
11. Reduce sedimentation and suspended solid
12. Reduce pollution from landfill
13. Strengthen protection of reservoirs
THE MECHANISM OF POLLUTION MONITORING PROGRAM IN LUAS

1. Identify the sources of pollution/complaint
2. Site visit
3. Task force of SG Selangor Pollution Control
4. Preparing the progress report / MTES paper / board
5. Integrated action by all relevant agencies
6. SG Selangor basin management committee meeting
7. MMKN
8. MTES
IMPLEMENTATION FRAMEWORK

- ‘Task Force of Sungai Selangor Pollution Control’ to control and monitor the activity in the river basin that contribute to the pollution, since 2004. Meeting will be held every 2 months.

- ‘Sg. Selangor Basin Management Committee’ To manage Sg. Selangor Basin in integrated and holistic approach with cooperation government agencies, private sector, stakeholders and community. Meeting will be held every 3 months.
POLLUTION CONTROL TASK FORCE / MANAGEMENT COMMITTEE

Chairman - Exco of Infrastructure & Public Facilities / Director of Lembaga Urus Air Selangor (LUAS)
Secretariat - Lembaga Urus Air Selangor (LUAS)

MEMBERS:
1. State Economic Planning Unit
2. Land and Mines Office
3. National Water Services Commission
4. Dept. of Solid Waste Management
5. Dept. of Irrigation and Drainage (Selangor, Hulu Selangor, Kuala Selangor & Gombak)
6. Dept. of Environment (Gombak)
7. Dept. of Town & Country Planning
8. Dept. of Agriculture (State, Hulu Selangor, Kuala Selangor & Gombak)
9. Dept. of Fishery (State, Hulu Selangor, Kuala Selangor & Gombak)
10. Dept. of Forestry (State)
11. Dept. of Health (State, Hulu Selangor, Kuala Selangor & Gombak)
12. Dept. of Veterinary Services (Selangor, Hulu Selangor, Kuala Selangor & Gombak)
13. Dept. of Public Works
15. Land and District Office Hulu Selangor, Kuala Selangor & Gombak
16. Alam Flora
17. Puncak Niaga
18. Syabas
19. Splash
20. Indah Water Konsortium

The function is to prompt action in case of any pollution occurrence to water sources based on ERP (Emergency Response Plan).

For example the palm oil spillage from the lorry to the nearby river due to an accident at Karak Highway.
POLICY 3: Protect Against Floods

ISSUES:

- Most flood prone areas in the basin are less developed and flood problems in the Sg. Selangor basin are therefore not as acute as in some others.

- Nevertheless floods do occur in some areas and cause hardship and losses to those affected.

- The flood plain is particularly susceptible and development in this area must take the flood risk into consideration.
POLICY 3: Protect Against Floods

**POLICY:**

- Selangor will protect the population against floods by preventive measures including planning restrictions and implementation of DID’s urban storm water manual.

- This will be supplemented by river works at selected sites.
POLICY 3: Protect Against Floods

STRATEGIES:

14. Improve storm water management

15. Improve river corridor management

16. Carry out works at problems sites
FLOOD PRONE AREA

Legend
- Orange: Flood Areas (1995)
- Dashed Line: Localised Flooding Areas

Kilometres
POLICY 4: CONSERVE THE FIREFLIES

ISSUES:

• The fireflies at the lower stretches of the river are famous (Kg. Kuantan)

• Important for tourism and the local economy

• Fireflies - symbol of the health of the environment

• Many have expressed concern about the status of the firefly population.

• Depends on many factors (land use and water quality)
**FIREFLIES**

- Kg. Kuantan and Kg. Bukit Belimbing - home to the firefly ‘Pteroptyx tener’
- Attract tourists and income for the local communities
- Habitat - berembang trees ‘Sonneratia caseolaris’ and feeding mainly on a small river snail ‘Cyclotropis carinata’
- Important - water quality and fresh water flow
Fireflies synchronous flashing at night
POLICY 4: CONSERVE THE FIREFLIES

Policy:

Selangor will conserve the fireflies by:

- establishing a fireflies park in cooperation with local community - to protect the habitat of the fireflies
- research related to the conservation of the fireflies

continued
POLICY 4: CONSERVE THE FIREFLIES

STRATEGIES:

17. Establish firefly park
18. Improve condition for firefly tourism
19. Continue monitoring and research related to the fireflies.
To monitor freshwater that released from the last intake point.

Requirement from EIA - 300 mld or 3.5 m3/s

To sustain the fireflies habitat at Kg. Kuantan (downstream).
Demonstration Project

- Upgrading an Imhoff tank to modern biological treatment, Rawang, Selangor.

- Ecological treatment of dry weather flow in drains from wet market and restaurants, Bukit Sentosa, Selangor.
OTHER TASKS:

- Licensing for Effluent Discharge (Sec. 79)
- Licensing for River Navigation (Sec. 96 & 97)
- Licensing for Diversion of River Water for Mini hydro. (Sec. 42)
- Licensing For Alteration Activities (Sec. 43)
AWARENESS PROGRAMMES

- **Qua-Qua Program** - Water Quality Monitoring Program with involvement of students and community (Waqu-Waqu Program in Japan).
- Community Project - River and Coastal Cleaning Program.
- Exhibition and Talk about - Conservation of Water Resources.
- Newsletter, Bulletin and Brochure about LUAS and conservation of water resources.
1. Physical Monitoring

2. Chemical Monitoring

3. Biological Monitoring
“Water For All”

Penalty For River Polluter!

“Conserve Water Resources, Ensure Healthy Environment”

THANK YOU