



# WATER RESOURCES MANAGEMENT IN SELANGOR – ISSUES AND STRATEGIES

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MALAYSIA WATER RESOURCES MANAGEMENT FORUM 2012, PUTRAJAYA  
26 NOV 2012





# OUTLINE

1

**ESTABLISHMENT OF SWMA**

2

**SWMA's FUNCTIONS**

3

**ISSUES AND STRATEGIES**

4

**CONCLUSION**



# ESTABLISHMENT OF SWMA/LUAS

➤ The inception of SWMA was the result of the directive of the Cabinet Ministers' Meeting in July 1997 in which the Ministry of Agriculture was requested the Selangor State Government to consider a proposal to establish;

“ an agency to manage the river and water resources in an integrated manner by applying the Selangor River as a pioneer project and the Thames River in the United Kingdom as the model for its implementation “.



## **ESTABLISHMENT OF SWMA/LUAS... cont**

**Selangor Waters Management Authority or its acronym, SWMA/LUAS is a one-stop agency for the management of water resources, river basin, water bodies, ground water and coastal waters in the State of Selangor.**

- It was established under the Selangor Waters Management Authority Enactment 1999 pursuant to the approval of the Selangor State Legislative Assembly on 9 April 1999.**



**19.15 Water Resources.** During the Plan period, several states experienced periodic water scarcity. This was caused by extended dry spells, and was compounded by the increasing demand for water, polluted water sources and the encroachment of development into water catchments. In this regard, the Government formed a National Water Resources Council in 1998 to provide a forum for a holistic approach for the planning and management of water resources. A National Water Resources Study for Peninsular Malaysia was completed in 2000 to determine the availability of water resources and water demand up to 2050. **The river-basin approach to water management in Malaysia was initiated with the establishment of Lembaga Urus Air Selangor (LUAS) in 1999.** In addition, various awareness campaigns were held with the cooperation of the relevant non-governmental organizations (NGOs) to promote the wise use of water and river conservation in general, especially through the annual *Cintailah Sungai Kita* campaigns.

**Sumber : RMK- 8 (2001-2005) ,( Chapter 19 : Environment and Sustainable Resource Management) , page 545.**



## **SWMA OBJECTIVES**

- **To ensure the water resources and environmental surrounding is in a manageable and sustainable condition, in order to support the socio-economic development of the progressive State.**
- **To undertake the function of planning, research, facilitator, coordinator, operation, enforcement, supervision in the development of integrated management of water resources and environment.**



## **SWMA OBJECTIVES ...continue**

- **To provide an environment that is conducive for public and private sector participation in the development, utilization and management of water resources and environmental surroundings taking into consideration the interests of the public and the State Government.**
- **To create the public awareness and the participation of the public on the importance of water resources and in caring and enhancing the quality of water.**



# SWMA's MAIN FUNCTIONS

Section 6, LUAS Enactment 1999 (17 functions) :

- Coordinate multi agency relationship in the State.
- Adopt and implement policies, plans and Government projects.
- Protect the interest of the State in respect of development , management, use and conservation of water resources.



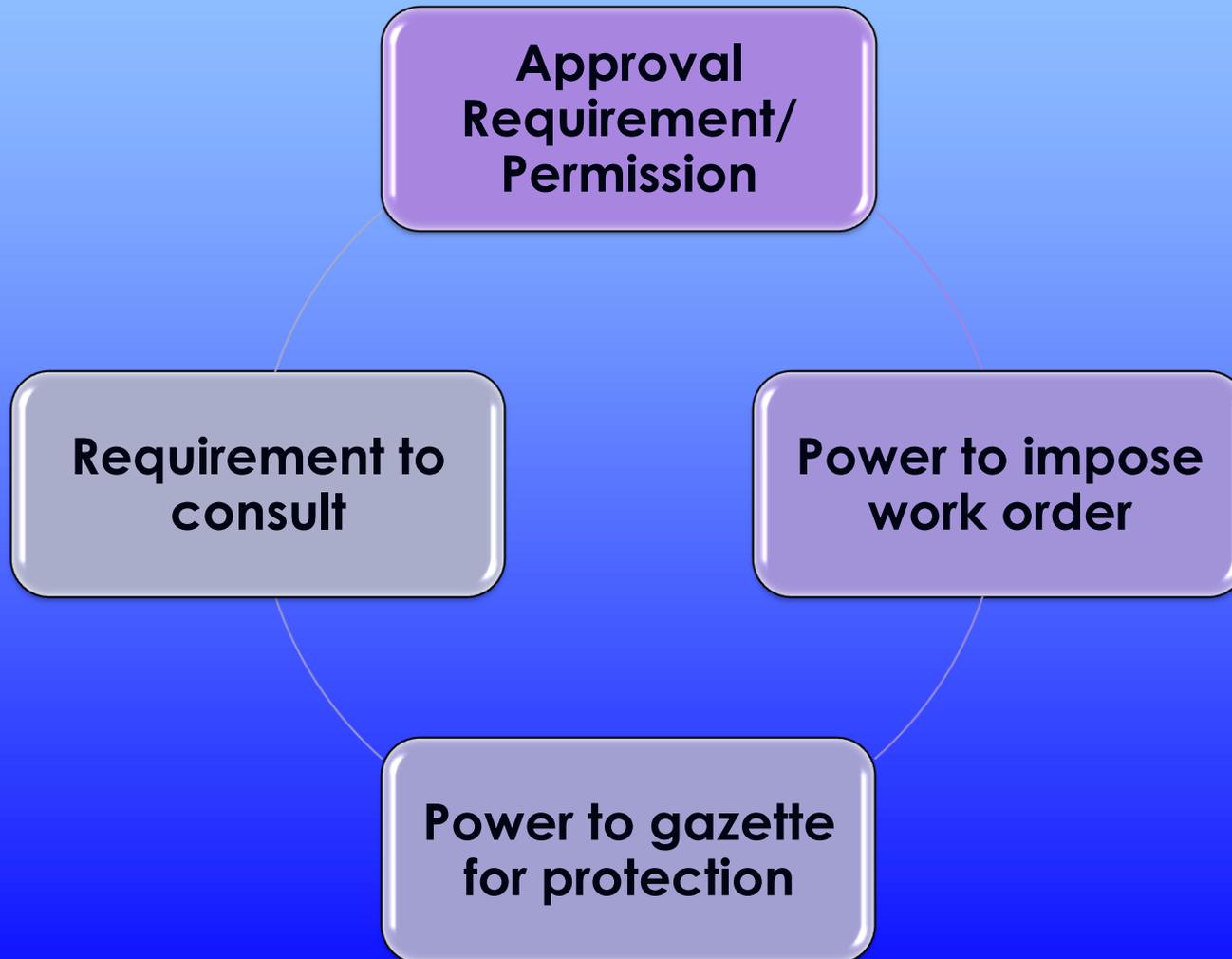
## **SWMA FUNCTIONS ...cont**

- **Regulate and control through licensing for all activities related to water resources.**
- **Regulate and control through monitoring and enforcement actions.**



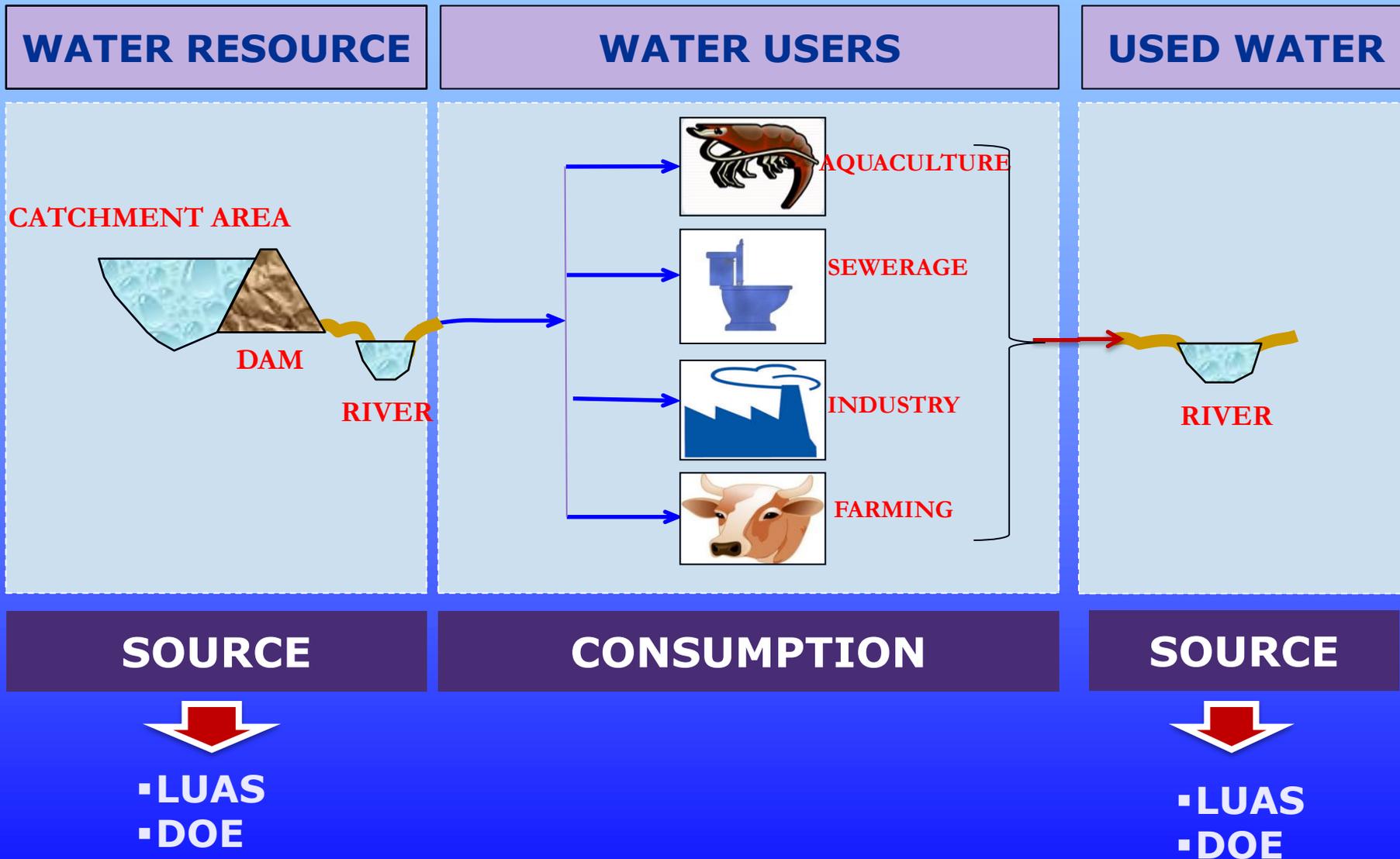
# RIVER CONSERVATION

(Legal Provision)



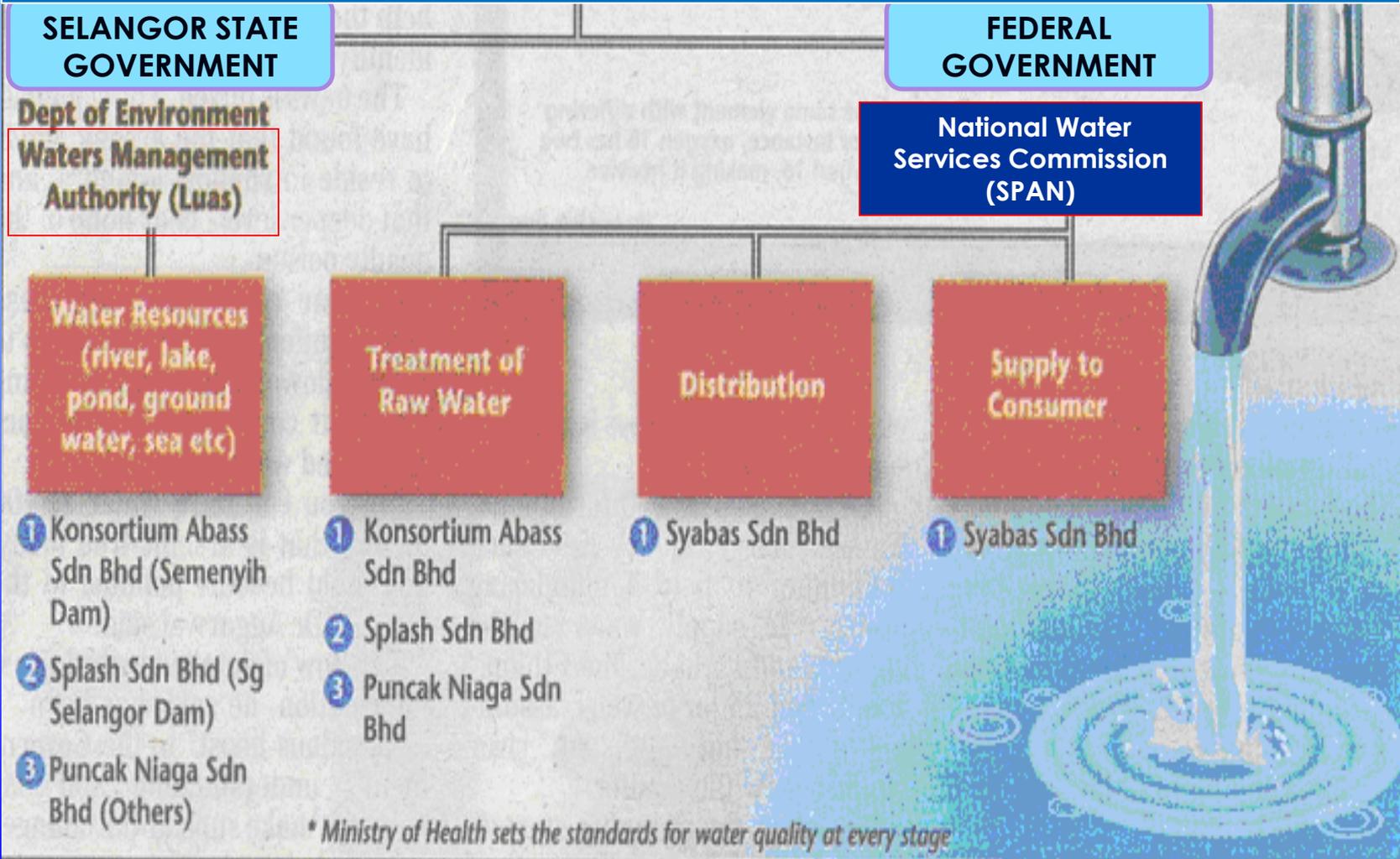


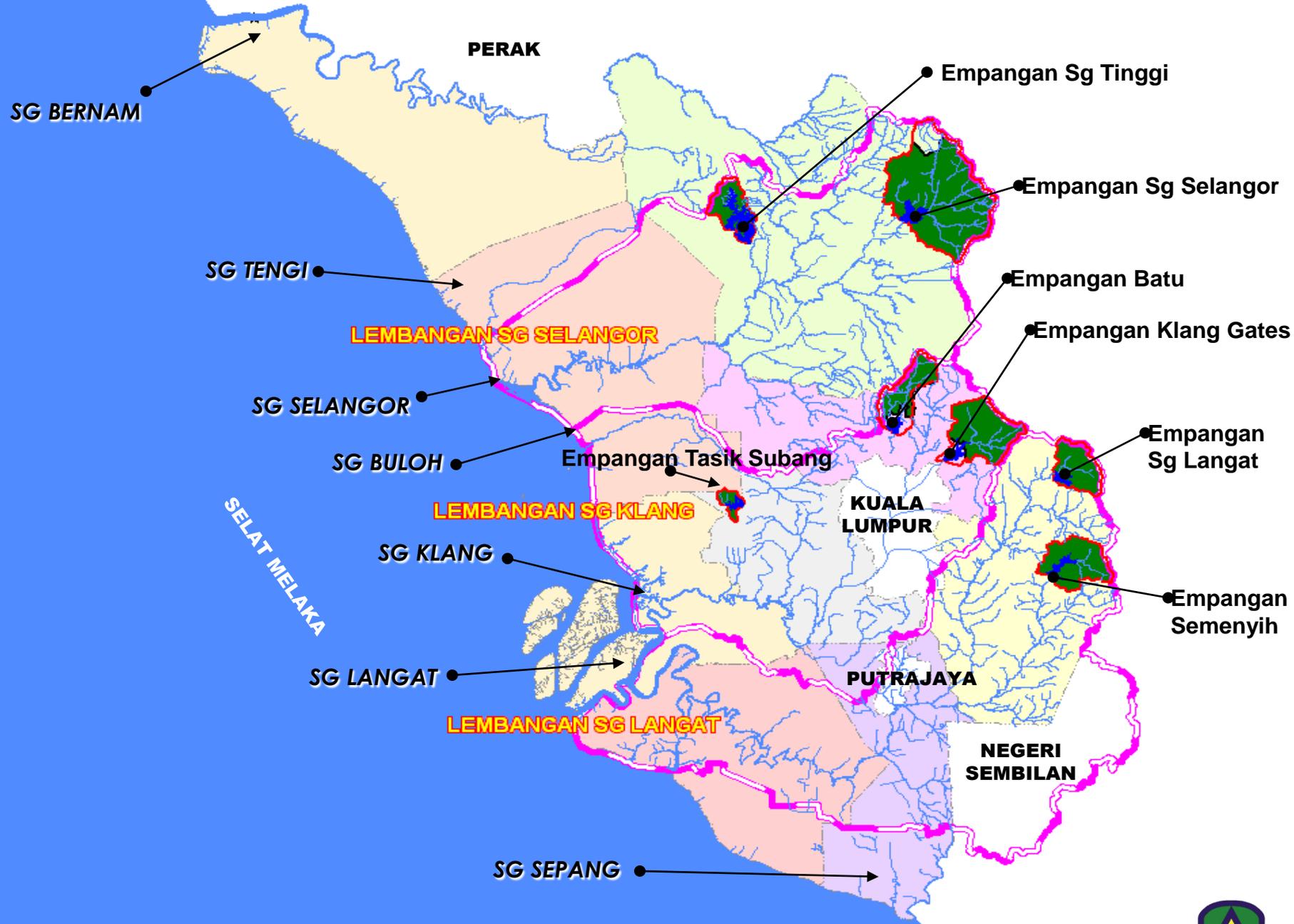
# Water Management





# WATER SUPPLY SERVICES FRAMEWORK





**RIVER BASINS AND DAMS IN SELANGOR**





# ISSUES

1

- **Water Resources Management (quantity and quality)**

2

- **Sectorial Approach In Water Resources Management**

3

- **Water Demand Management**

4

- **Lack of Monitoring and Enforcement**



## NATIONAL WATER RESOURCES STUDY REVIEW (2000-2050)

### Available Rainfall in Malaysia ( mm)

State	State Area ( sq km)	Rainfall	Actual Evaporation	Groundwater Recharge	Surface Runoff
Perlis	821	1,880	1,290	120	470
Kedah	9,500	2,310	1,430	130	750
Pulau Pinang	1,048	2,350	1,430	120	800
Perak	21,035	2,420	1,320	170	930
<b>Selangor</b>	<b>8,396</b>	<b>2,190</b>	<b>1,280</b>	<b>150</b>	<b>760</b>
Negeri Sembilan	6,686	1,830	1,210	130	490
Melaka	1,664	1,880	1,210	100	570
Johor	19,210	2,470	1,130	200	1,140
Pahang	36,137	2,470	1,250	120	1,100
Terengganu	13,035	3,310	1,470	150	1,690
Kelantan	15,099	2,600	1,290	140	1,170
West Malaysia	132,631	2,490	1,280	148	1,060
Sabah	73,631	2,560	1,190	190	1,180
Sarawak	124,450	3,640	1,250	240	2,150
FT Labuan	91	3,100	1,480	150	1,470
East Malaysia	198,172	3,240	1,230	221	1,790
Malaysia	330,803	2,940	1,250	192	1,500



## NATIONAL WATER RESOURCES STUDY REVIEW (2000-2050)

### Total Consumptive Water Demand Against Total Water Availability for All Sectors

State	Land Area Sq km	Total Consumptive Water Demand (mm)					Effective Rain (mm)	Excess/Deficit (mm)-Unregulated Flows				
		2010	2020	2030	2040	2050		2010	2020	2030	2040	2050
Perlis	821	372.3	364.2	348.0	345.5	342.3	71	(302)	(294)	(277)	(277)	(272)
Kedah	9,500	307.6	313.2	299.1	302.4	302.8	113	(195)	(201)	(187)	(190)	(190)
Pulau Pinang	1,048	729.4	791.3	797.5	834.4	853.2	120	(609)	(671)	(677)	(714)	(733)
Perak	21,035	92.7	91.6	85.5	85.6	86.1	140	47	48	54	54	53
<b>Selangor</b>	8,396	<b>266.6</b>	<b>296.6</b>	<b>306.0</b>	<b>328.7</b>	<b>348.0</b>	<b>114</b>	(153)	(183)	(192)	(215)	(234)
Negeri Sembilan	6,686	51.0	54.1	53.6	54.7	56.0	74	23	19	20	19	18
Melaka	1,664	193.9	220.1	225.9	246.0	263.4	86	(108)	(135)	(140)	(161)	(178)
Johor	19,210	37.2	45.8	53.8	60.6	67.7	171	134	125	117	110	103
Pahang	36,137	20.1	26.2	24.8	25.2	26.5	165	145	139	140	140	138
Terengganu	13,035	67.8	74.8	74.4	76.7	78.7	254					
Kelantan	15,099	108.1	107.2	105.0	106.0	106.2	176					
Pen Malaysia	132,631	96.5	103.1	102.2	105.9	109.2	159	62	56	57	53	50
Sabah	73,631	12.4	18.4	18.9	19.6	20.0	177	165	159	158	157	157
FT Labuan	91	197.7	264.3	285.0	304.0	318.0	323					4
Sarawak	124,450	8.4	17.3	17.0	17.5	18.0	221					202
East Malaysia	198,172	10.0	17.9	17.9	18.4	18.9	269	258	251	251	250	250
Total Malaysia	330803	44.7	52.0	51.7	53.5	55.1	225.0	180.3	173.0	173.3	171.5	169.9

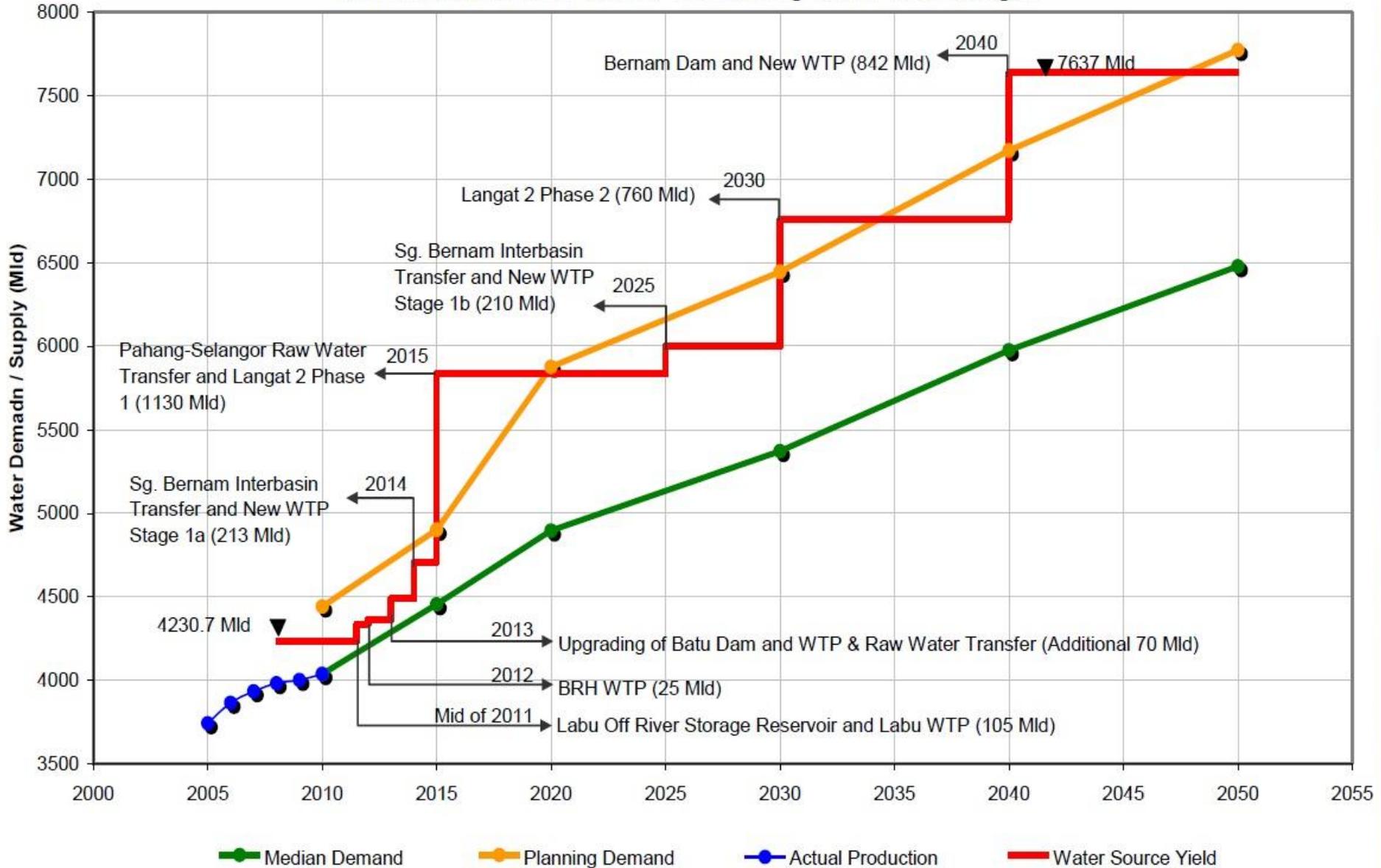
**Effective rain in Selangor, 14% from 760 mm.**

**50% surface runoff utilisation**

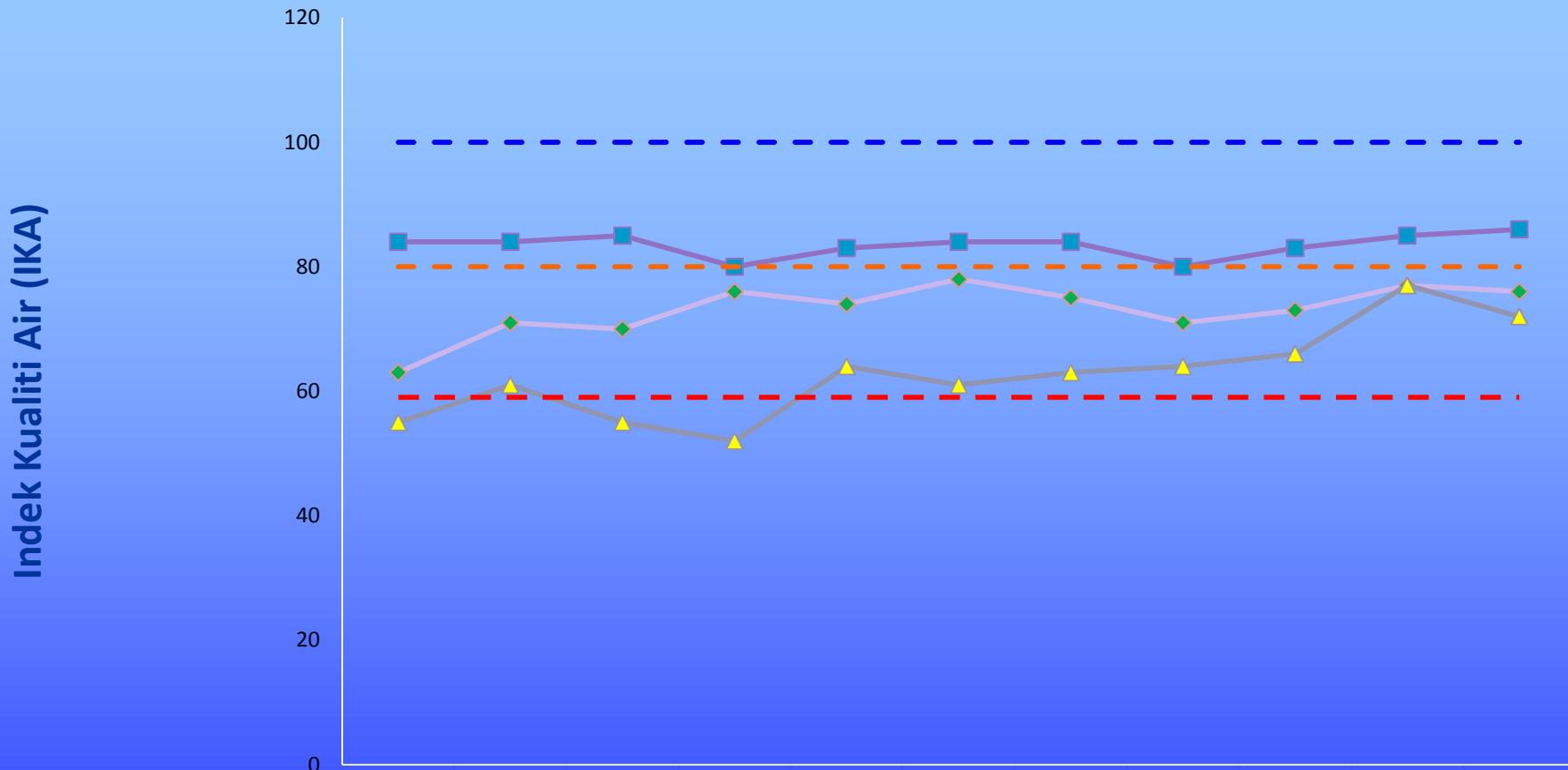


# POTABLE WATER DEVELOPMENT

## Demand versus Water Source Yield During 1 in 50 Year Drought



## TREN KUALITI AIR IKA (WQI) LEMBANGAN SUNGAI DI NEGERI SELANGOR SEHINGGA OGOS 2012



	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	Sehingga Ogos 2012
◆ Langat	63	71	70	76	74	78	75	71	73	77	76
■ Selangor	84	84	85	80	83	84	84	80	83	85	86
▲ Klang	55	61	55	52	64	61	63	64	66	77	72
— Bersih (81-100)	100	100	100	100	100	100	100	100	100	100	100
— Sederhana Tercemar (60-80)	80	80	80	80	80	80	80	80	80	80	80
— Tercemar (0-59)	59	59	59	59	59	59	59	59	59	59	59

**SUMBER : DOE**



# 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 RESOURCES STRATEGIES IN SELANGOR

1

• Water Resources Management in Selangor

2

• Implementation Of IRBM and ICM Plan

3

• River Management Policy

4

• Alternative Water Resources Management

5

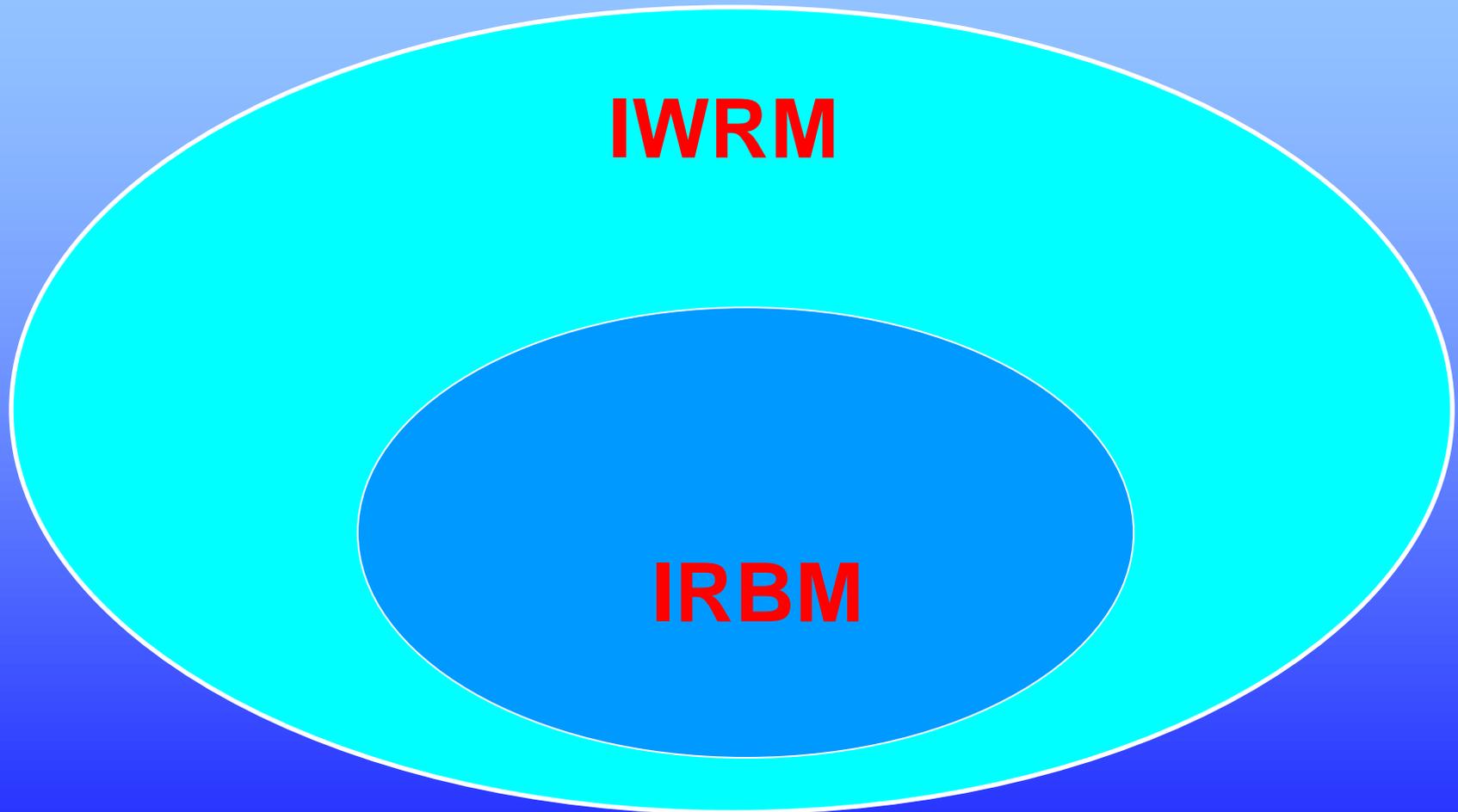
• SWMA's Gazettement

6

• Strengthen Monitoring and Enforcement Mechanism



# IWRM builds on river basin management



- from a water quantity *and* water quality perspective



# 1. WATER RESOURCES MANAGEMENT IN SELANGOR

- a. Charge and Licensing of Water Abstraction , s.41(2)
- b. Written Approval of Alteration Activities, s.43(1)
- c. Licensing of Pollutant Discharges, s.79(1)
- d. Licensing of Navigation , s.97(1)
- e. Licensing of Water Diversion For Electric Generation, s. 42(3)
- f. Licensing of water recreation activities, s. 98(1) – Study Stage

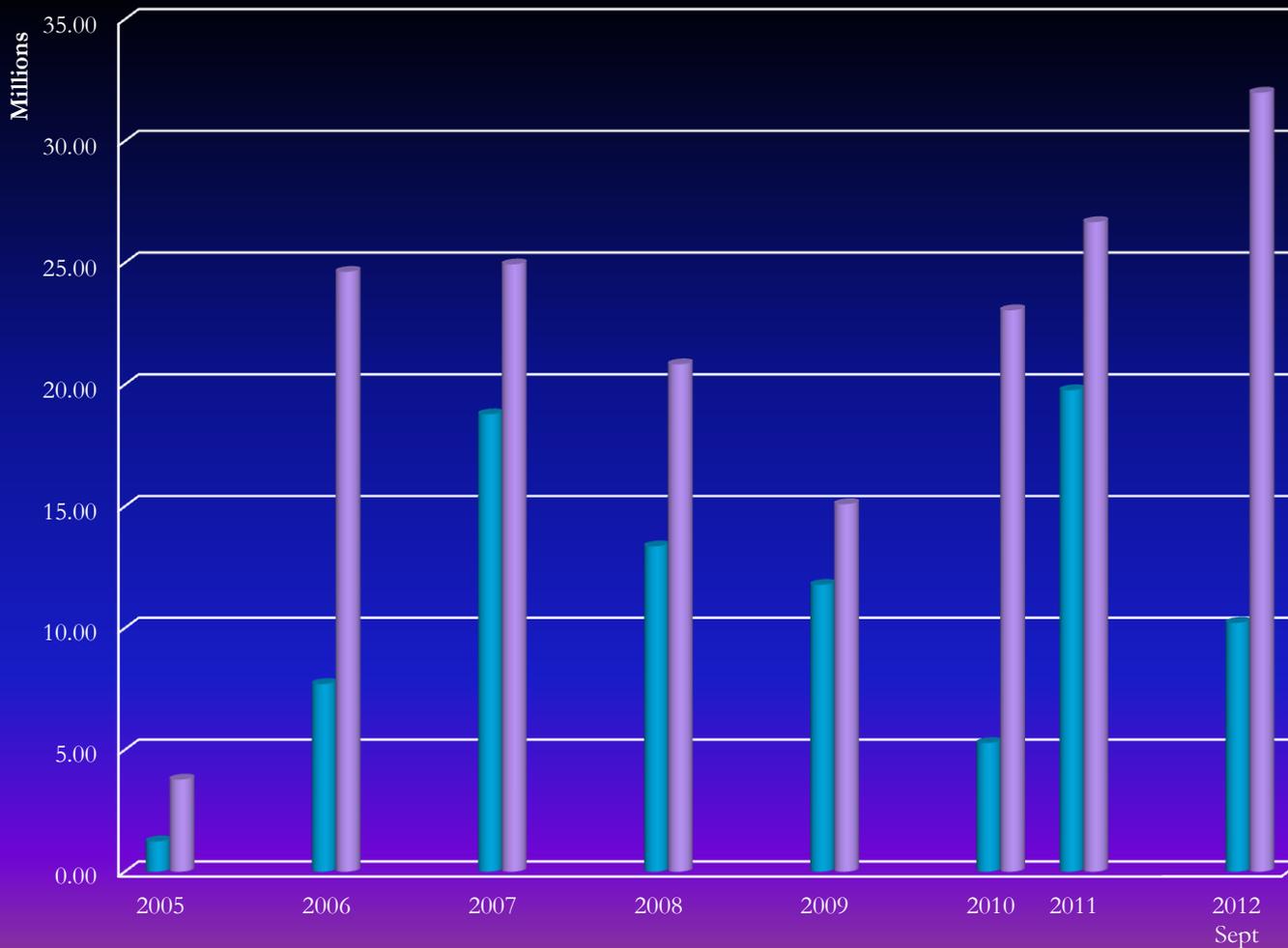


## a. Licensing of Water Abstraction

- Charging and licensing of ground water and surface water abstraction was started on 1 July 2005 for water supply and commercial users.
- Parallel to Section 41(2), SWMA Enactment 1999.
- The latest charges rate are RM 0.01/ m<sup>3</sup> for public utilities and RM 0.05/m<sup>3</sup> for commercial users.
- Water Resources Abstraction (State of Selangor) Regulation 2012 to control water abstraction and to avoid any land settlement, saline intrusion and also other impact to the environment.



# VOLUME OF WATER ABSTRACTION (2005-Sept.2012)



Year	No. Premises	No. License
2005	45	69
2006	77	119
2007	103	163
2008	154	235
2009	163	262
2010	174	225
2011	183	251
Sept 2012	159	259

■ GROUND WATER  
(GW,m3)

■ SURFACE WATER  
(SW,m3)



## b. Written Approval of Alteration Activities

- Activities relating to water resources such as construction of jetty, bridge and other structures at/on/in river is based on Section 43(1), SWMA Enactment 1999.
- To protect and conserve the quantity and quality of water resources and to avoid any obstruction in the river.





# WRITTEN APPROVAL FOR ALTERATION ACTIVITIES (\$43 & \$70)



Bridge



Sand Mining



River Diversion



# WRITTEN APPROVAL FOR JETTY ACTIVITY



**LKC JETTY**



**LION WATERWAYS JETTY**

Operator	Tonnage /month	Charge /year
Lion Waterway	63,000	RM 1,200 (review)
LKC	18,000	RM 54,000



## c. Licensing of Emission or Pollutant Discharge

■ Regulation which is parallel to Section 79(1), SWMA Enactment 1999 is being enforced on 20 April 2012.

■ To control the effluent quality that discharged to the water resources.

JUNE 10, 2012 • • PENINSULAR MALAYSIA RM 3.00 • SARAWAK AND SAHAWAK RM 3.00 • BRUNEI \$ 3.00 • PP412306/2012 (03/09/01)

# NEW SUNDAY TIMES

228. Govt. Notices/Tenders



LEMBAGA URUS AIR SELANGOR  
(LUAS)

**PEMAKLUMAN RASMI**

**PELAKSANAAN PERATURAN BARU BERKAITAN  
PENCEMARAN DI NEGERI SELANGOR**

1. Adalah dimaklumkan bahawa satu peraturan baru bagi mengawal pencemaran yang dipanggil "Peraturan-Peraturan Kemasukan atau Pelepasan Bahan Pencemar (Negeri Selangor) 2012" telah diperkenalkan dan kini berkuatkuasa di Negeri Selangor.
2. Peraturan ini telah diwartakan pada 19 April 2012 dan mula berkuatkuasa pada 20 April 2012. Peraturan ini memberikan kuasa kepada Lembaga Urus Air Selangor (LUAS) untuk melesenkan dan mengawal selia pelepasan bahan pencemar daripada tujuh (7) jenis aktiviti berikut yang mempunyai kesan kepada pencemaran sumber air, iaitu :-
  - (a) Akuakultur air tawar dalam kolam atau sangkar,
  - (b) Akuakultur udang laut dalam kolam,
  - (c) Pembangunan atau kerja tanah,
  - (d) Penternakan selain babi,
  - (e) Penternakan babi,
  - (f) Peliharaan haiwan kesayangan, dan
  - (g) Aktiviti berkaitan perlombongan
3. Setiap aktiviti tersebut hanya akan tertakluk sekiranya kuantiti dan deskripsinya jatuh di bawah skop yang ditetapkan. Sebarang pelepasan bahan pencemar daripada aktiviti tersebut ke dalam sumber air hendaklah mematuhi had piawaian parameter yang telah ditetapkan. Sebarang ketidakpatuhan adalah tertakluk kepada caj dan penalti yang ditetapkan.
4. Kepada mana-mana individu yang menjalankan mana-mana aktiviti di atas di dalam Negeri Selangor adalah dikehendaki untuk memohon lesen daripada LUAS.
5. Setiap lesen dikeluarkan secara tahunan dan hanya akan tertakluk kepada fi pendaftaran dan fi lesen yang telah ditetapkan. Borang permohonan lesen boleh dimuat turun secara percuma daripada laman web LUAS di [www.luas.gov.my](http://www.luas.gov.my) atau pun mendapatkannya terus dari ibu pejabat atau cawangan LUAS.
6. Sebarang kemusikilan berkaitan perkara ini boleh dipanjangkan kepada LUAS di talian 03-55111800 atau emel kepada [admin@luas.gov.my](mailto:admin@luas.gov.my).

Sekian, terima kasih.

**HAJI MD. KHAIRI BIN SELAMAT**  
Pengarah,  
Lembaga Urus Air Selangor.  
25hb. Mei 2012



# METHODS OF IMPLEMENTATION, s.79(1)



Identify final discharge point.

License fee RM 650.00



Analysis Report every 3 months



Analysis by Accredited Laboratory



Discharge with the permissible limit



Freshwater Aquaculture



Shrimp Aquaculture



Earthwork/Development



Pigs



Animal Husbandry Except Pigs



Pets



Quarry/Mining



7 Scheduled Activities s.79(1)



## d. Licensing for River Navigation

- Inland Waterway Navigation (State of Selangor) Regulation 2012 based on Section 97(1), SWMA Enactment 1999.
- Enforced on **20 April 2012**
- To control navigation activities in the river.



228. Govt. Notices/Tenders



LEMBAGA URUS AIR SELANGOR  
(LUAS)

**PEMAKLUMAN RASMI**

**PELAKSANAAN PERATURAN BARU BERKAITAN  
NAVIGASI VESEL DI SUNGAI NEGERI SELANGOR**

1. Adalah dimaklumkan bahawa satu peraturan baru bagi mengawalselia navigasi jalan air pedalaman yang dipanggil "Peraturan-Peraturan Navigasi Jalan Air Pedalaman (Negeri Selangor) 2012" telah diperkenalkan dan kini berkuatkuasa di dalam Negeri Selangor.
2. Peraturan ini telah diwartakan pada 19 April 2012 dan mula berkuatkuasa pada 20 April 2012. Peraturan ini memberikan kuasa kepada Lembaga Urus Air Selangor (LUAS) untuk melesenkan dan mengawalselia vesel-vesel yang beroperasi di sungai, tasik dan jalan air pedalaman di luar kawasan pelabuhan di dalam Negeri Selangor.
3. Selaras dengan peraturan ini juga, pihak LUAS adalah dipertanggungjawabkan untuk memastikan setiap vesel belayar dengan selamat dan tidak membahayakan di dalam jalan air pedalaman di dalam Negeri Selangor.
4. Kepada mana-mana individu yang menjalankan aktiviti navigasi di jalan air pedalaman di dalam Negeri Selangor adalah dikehendaki untuk memohon lesen daripada LUAS.
5. Setiap lesen dikeluarkan secara tahunan dan ianya akan tertakluk kepada fi pendaftaran, fi lesen dan fi vesel yang telah ditetapkan. Borang permohonan lesen boleh dimuat turun secara percuma daripada laman web LUAS di [www.luas.gov.my](http://www.luas.gov.my) atau pun mendapatkannya terus di ibu pejabat atau cawangan LUAS.
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Sekian, terima kasih.

**HAJI MD. KHAIRI BIN SELAMAT**  
Pengarah,  
Lembaga Urus Air Selangor.  
25hb. Mei 2012



## e. Licensing of water diversion for electric generation

- Charge rate is RM 50,000.00/MW generated and being enforced on 11 Nov 2010.
- Subject to Section 42(3), SWMA Enactment 1999.
- To control water diversion and maintain the ecological environment.

No. 3617.

PEMBERITAHUAN CAJ BAGI PELENCONGAN AIR  
DARIPADA MANA-MANA SUMBER AIR

NOTIFICATION OF CHARGES FOR DIVERSION OF WATER  
FROM ANY WATER SOURCE

Pada menjalankan kuasa yang diberikan oleh subseksyen 44(1) Enakmen Lembaga Urus Air Selangor 1999 [En. 2/1999], Lembaga Urus Air Selangor, dengan kelulusan Pihak Berkuasa Negeri, dengan ini menetapkan kadar seperti yang dinyatakan dalam Jadual sebagai caj bagi pelencongan air daripada mana-mana sumber air bagi Negeri Selangor dan hendaklah berkuat kuasa pada tarikh ia disiarkan dalam *Warta*.

JADUAL

Tujuan Penggunaan (1)	Caj (RM) (2)
Penjanaan Elektrik	50,000.00/MW



**Sungai Kerling Minihydro  
(SREP, 2MW)**



## 2. IMPLEMENTATION OF IRBM AND ICM PLAN

**POLICY 1 : ENSURE SUFFICIENT WATER**

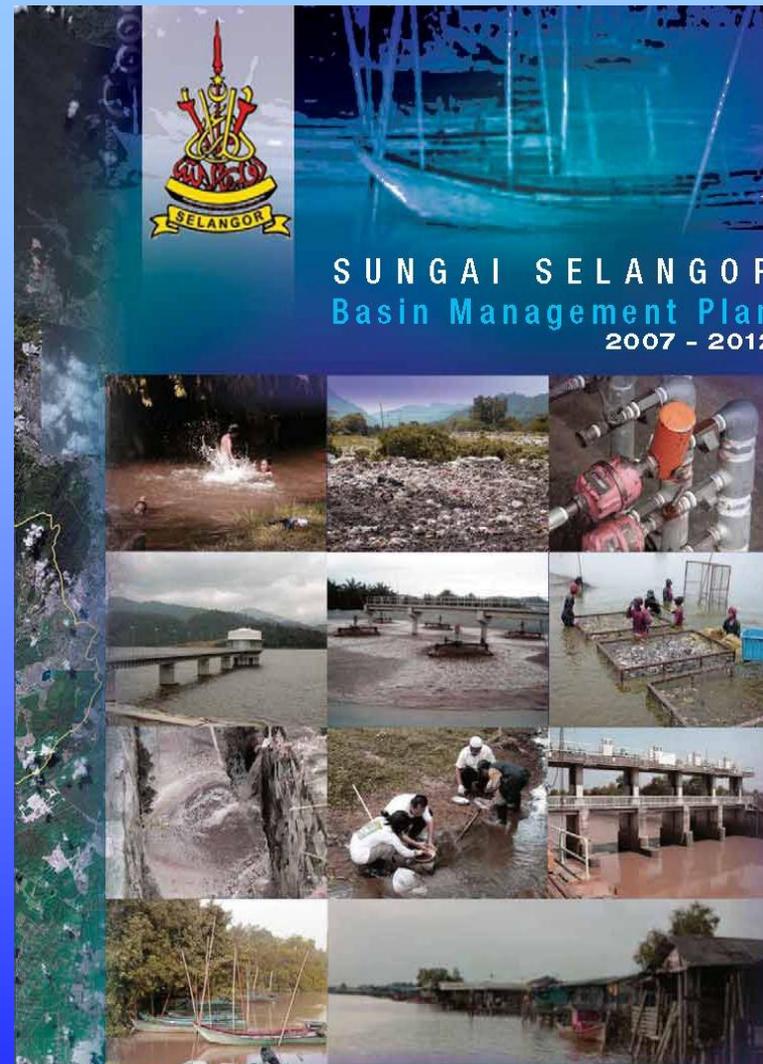
**POLICY 2 : ENSURE CLEAN WATER**

**POLICY 3 : PROTECT AGAINST FLOOD**

**POLICY 4 : CONSERVE THE FIREFLIES**

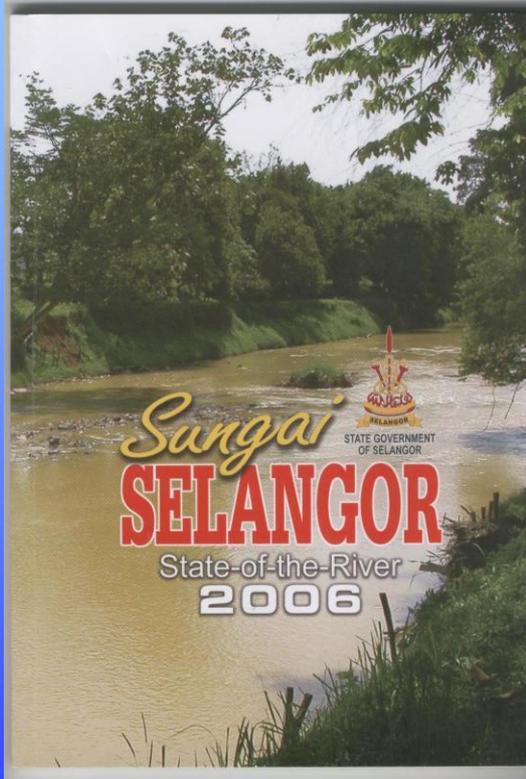
**Status :**

- Review the IRBM Sg. Selangor Plan (2007-2012)
- 1 IRBMP – 1 RB





# ANNUAL REPORT – ‘State-of River Report’



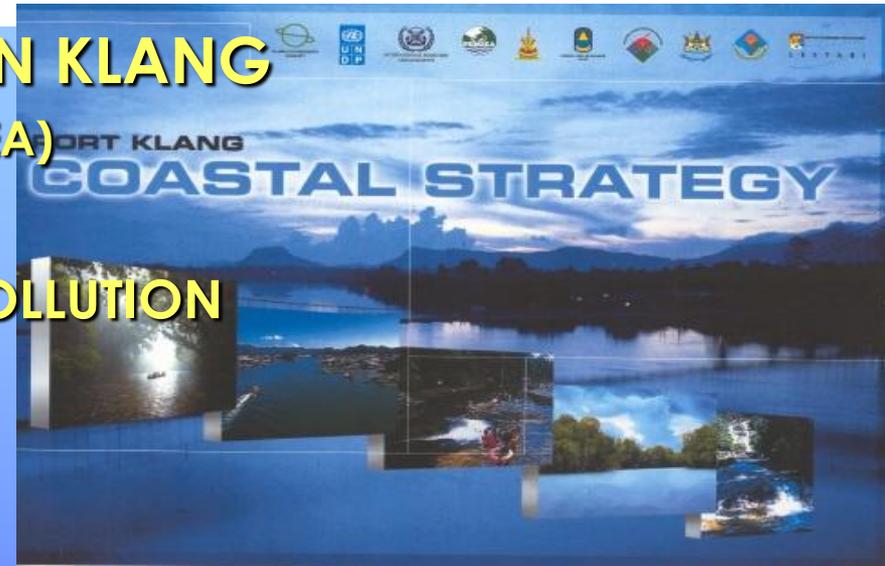
- It describe the current status, trends and effort made to improve the state of the river.



## PORT KLANG ICM – PELABUHAN KLANG (KLANG & KUALA LANGAT COASTAL AREA)

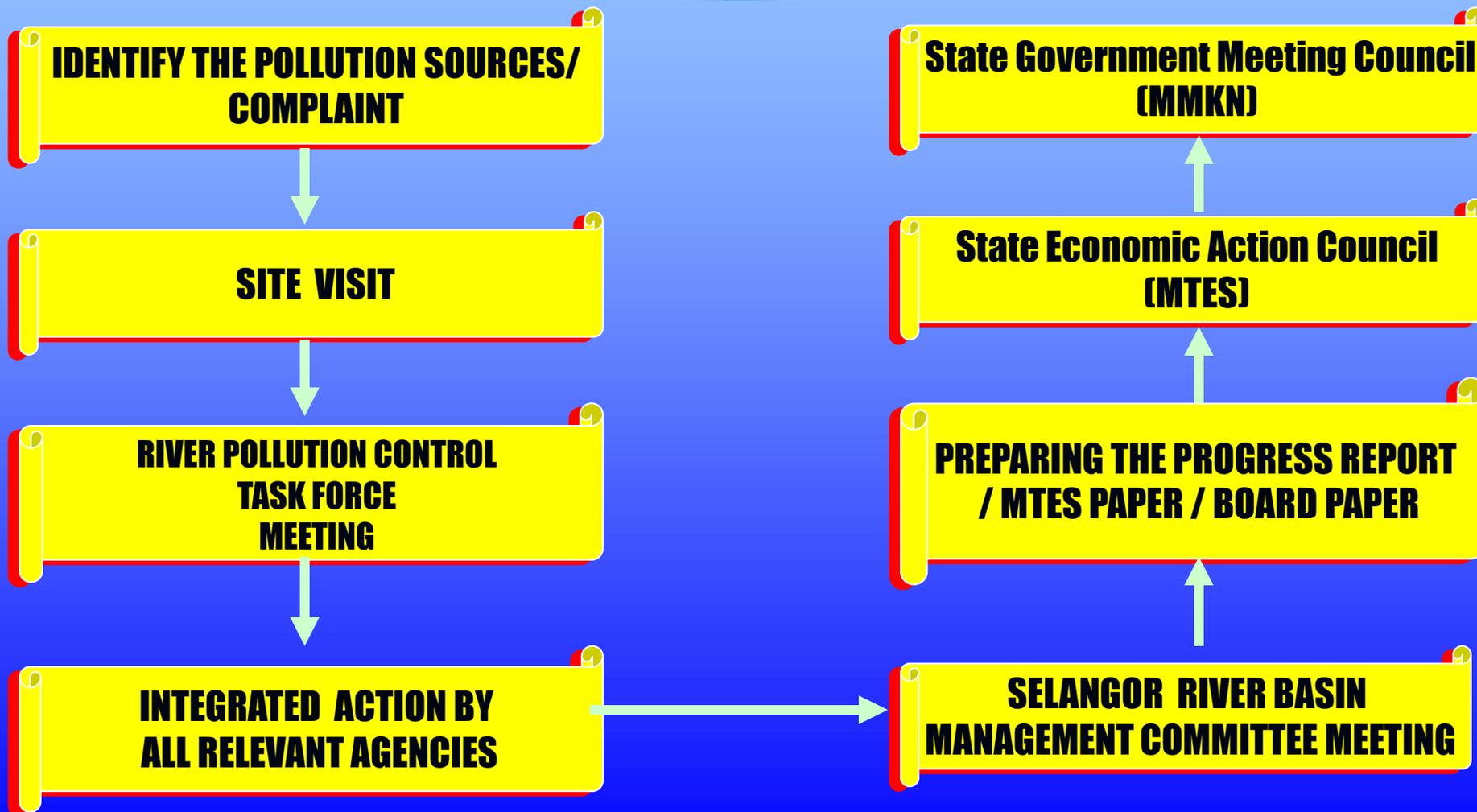
- POLICY 1 – WATER RESOURCES POLLUTION
- POLICY 2 – HABITAT EXTINCTION
- POLICY 3 – SOLID WASTE
- POLICY 4 – HEALTH
- POLICY 5 – MARINE AND NATURAL RESOURCES EXPLOITATION
- POLICY 6 – EROSION AND SEDIMENTATION

**Status** : Kuala Selangor and Sabak Bernam completed. Sepang District in 2013.



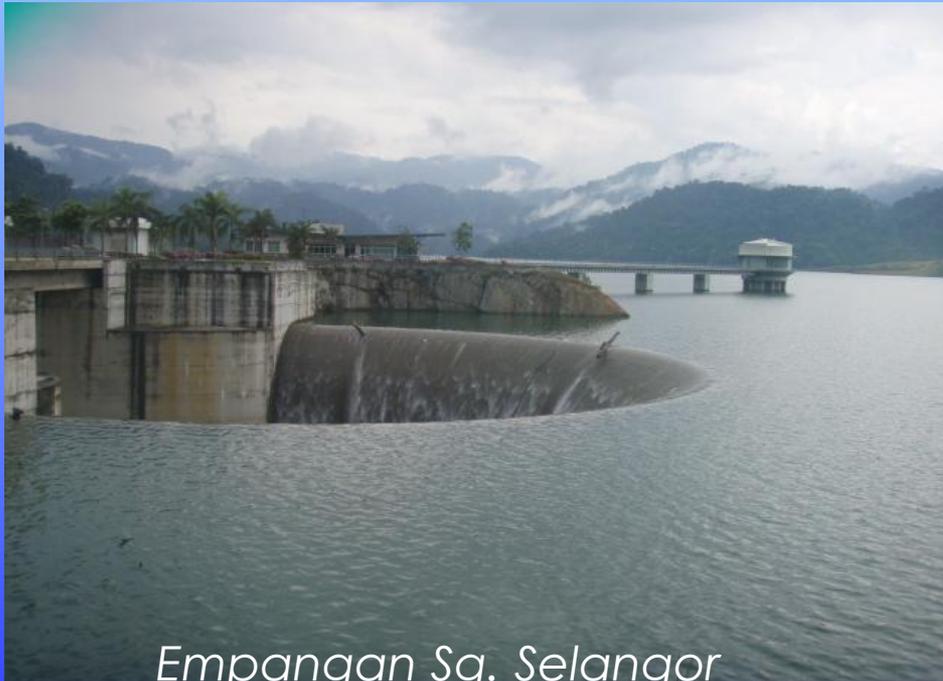


# THE MECHANISM OF POLLUTION MONITORING PROGRAM IN LUAS





# DAM MONITORING AND CONTROL



*Empangan Sg. Selangor*

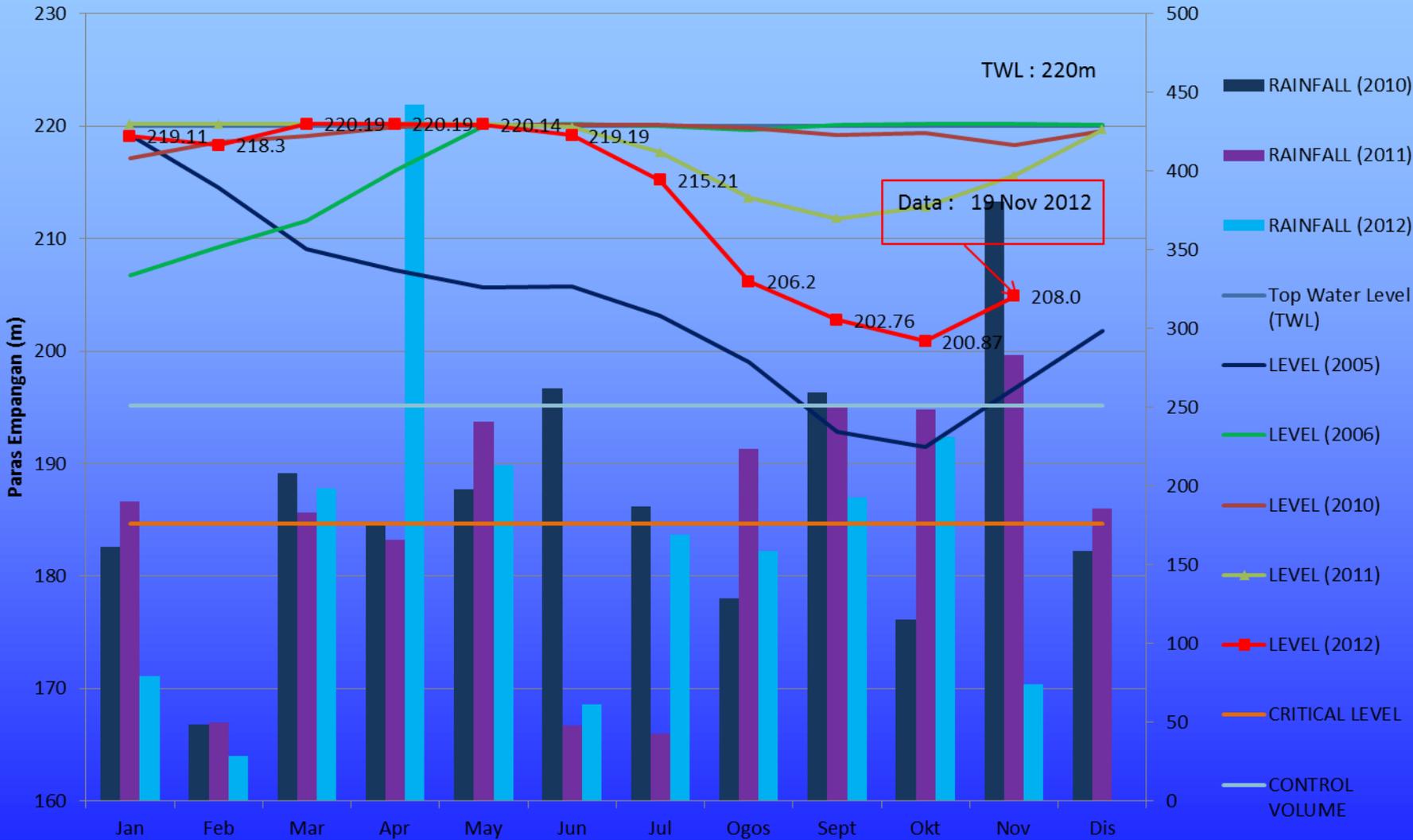


*Empangan Sg. Tinggi*



## Water Level @ Sg. Selangor Dam

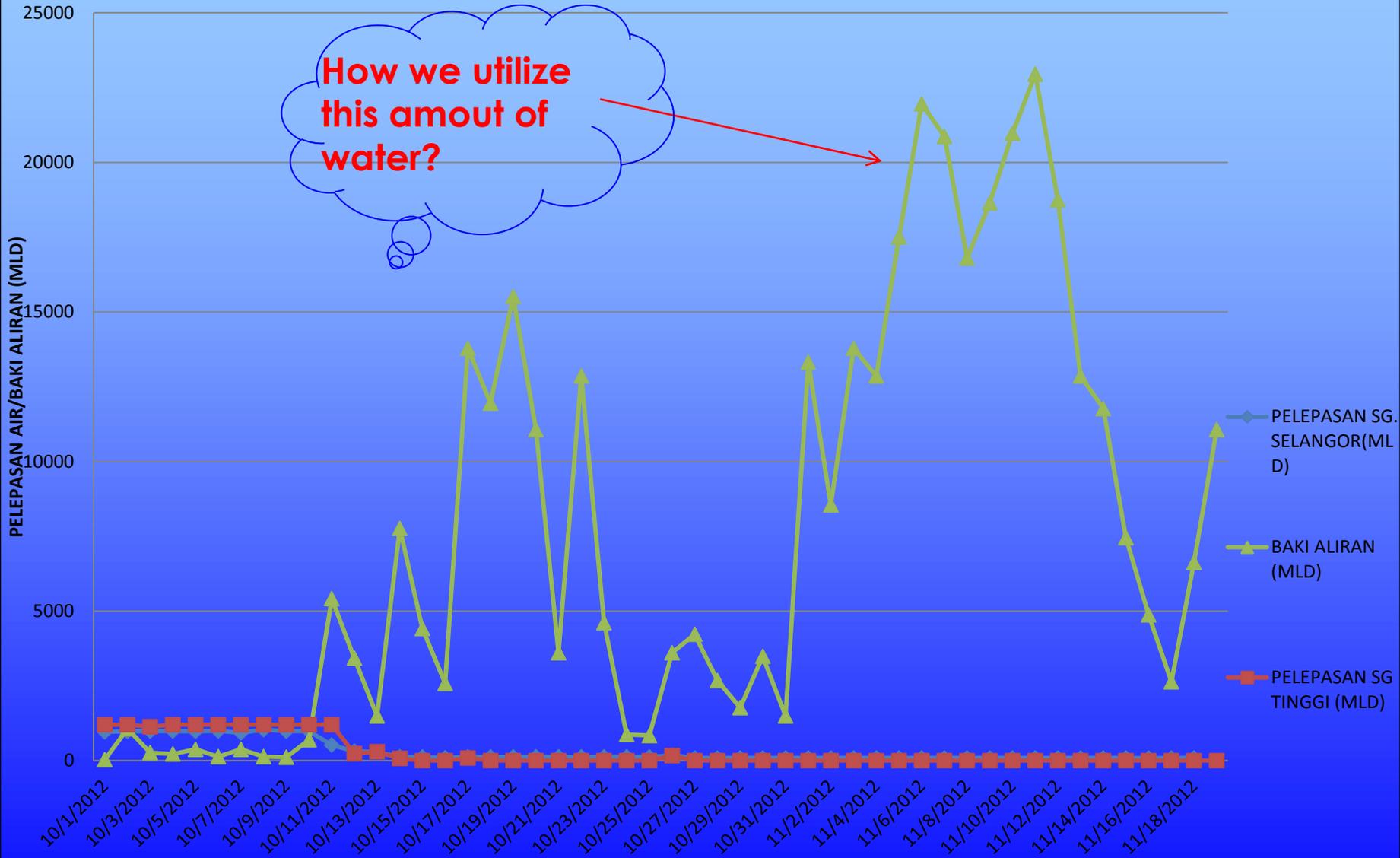
LEMBAGA URUS AIR SELANGOR (LUAS)





## WATER RELEASE FROM SG. SELANGOR AND SG. TINGGI DAM COMPARE TO RESIDUAL FLOW AT BARRRAGE BESTARI JAYA

How we utilize this amount of water?





### 3. RIVER MANAGEMENT POLICY

- To ensure and conserve the natural physical of the river to maintain the geomorphology.
- To conserve the river in term of ecology and environment for aquatic life.
- To conserve and adopt the aesthetic value of the river in any project development by maintaining the existing of natural river.
- To ensure the sufficient water quantity and clean water quality of the river for water supply.
- To implement the Best Management Practices (BMPs) in any project development to sustain the natural river such as MSMA.

**Note: Related to s43(1), SWMA Enactment for 'alteration activities'.**



## **4. ALTERNATIVE WATER RESOURCES MANAGEMENT**

- **Alternative Water Resources Task Force to monitor and identify the new potential water resources to be developed for water supply.**
- **Development of water resources project on application of storage pond as off-river storage and implementation of rain water harvesting.**
- **Gazettement of 17 ponds including ex-mining pond as zone of protection (s.48) for alternative water resources.**



## 5. SWMA's GAZETTEMENT

- **Zone Of Protection (Declared Area and Restriction) Notification, No. 2 2010 – (7 dam water catchment**
- **Zone Of Protection (Declared Area and Restriction) Notification, 2009 – (Fireflies, Mukim Pasangan).**
- **Zone Of Protection (Declared Area and Restriction) Notification 2010 (environmental sensitive area, Mukim Kapar)**
- **Selangor River Basin Management Plan (2007-2012)**
- **Port Klang Strategy Implementation Plan**

# ZONE OF PROTECTION (DECLARED AREA AND RESTRICTION) PLAN

## 2 JULAI 2009 (POLICY 4 IRBM Sungai Selangor : Conservation of Fireflies)



CADANGAN PEWARTAAN  
ZON PERLINDUNGAN SG. SELANGOR  
MUKIM PASANGAN  
KELUASAN : 1108 He

**PETUNJUK :**

-  Zon
-  Perlindungan
-  Sungai
-  Kampung
-  Lot Tanah

**PW1539**



# 6. STRENGTHEN MONITORING & ENFORCEMENT

## MECHANISM Pig farming



← Before enforcement



→ After enforcement





LEMBAGA URU  
SELANGOR (L



**Illegal Water Abstraction**



**Illegal Alteration Activities**



Leachate from  
dumping site.

30/03/2009 12:35



Illegal Sand  
Mining



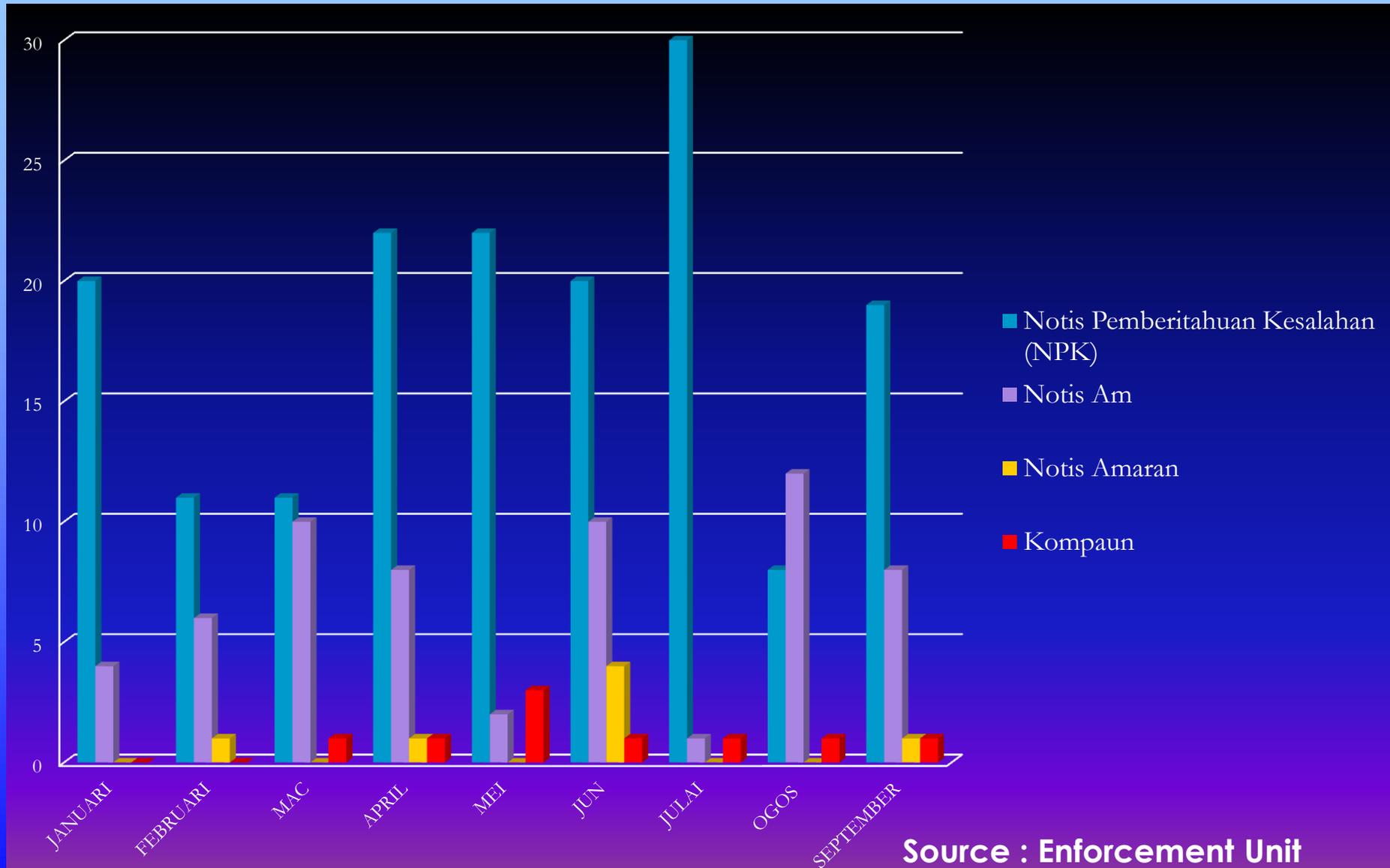
Integrated enforcement  
among technical agencies



23/07/2010 17:15



# NOTICES OF ENFORCEMENT



Source : Enforcement Unit



# CONCLUSION

- Supported and coordinated through;
  - Organisational setup
  - Legal aspect and provision
  - Political commitment
  - Technical competence



LEMBAGA URUS AIR  
SELANGOR (LUAS)

# LEMBAGA URUS AIR SELANGOR

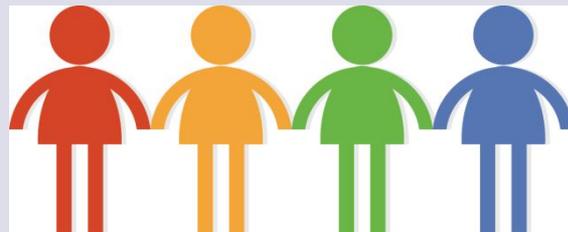
## ROLE FOR WATER RESOURCES CONSERVATION



**GOVERNMENT**



**PUBLIC**



**NGO**



**PRIVATE SECTOR**

# IWRM OBJECTIVE : RESTORATION & TRANSFORMATION

DEGRADED ENVIRONMENT OF WATER RESOURCES, RIVER BASINS

CONTROLLED PLANNING & DEVELOPMENT ACTIVITIES THROUGH BEST ENVIRONMENTAL MGMT. PRACTICES FOR SUSTAINABLE DEVELOPMENT & MGMT OF WATER RESOURCES & RIVER BASINS (IRBM)





**THANK YOU**

*Integrated approach, the way forward.....*