



MALAYSIA WATER RESOURCES MANAGEMENT FORUM 2012



WATER RESOURCES AGENDA IN MALAYSIA



By:

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Perbadanan Putrajaya, Putrajaya



OUTLINE PRESENTATION

- **Introduction**
- **Water Issues and Challenges**
- **Strategic Approach**
- **Way Forward**
- **Conclusion**



INTRODUCTION



MALAYSIA WATER VISION

“In support of Vision 2020 (towards achieving developed nation status), Malaysia will **conserve and **manage** its water resources to **ensure adequate and safe water for all** (including the environment)”**



KEY OBJECTIVES OF THE VISION

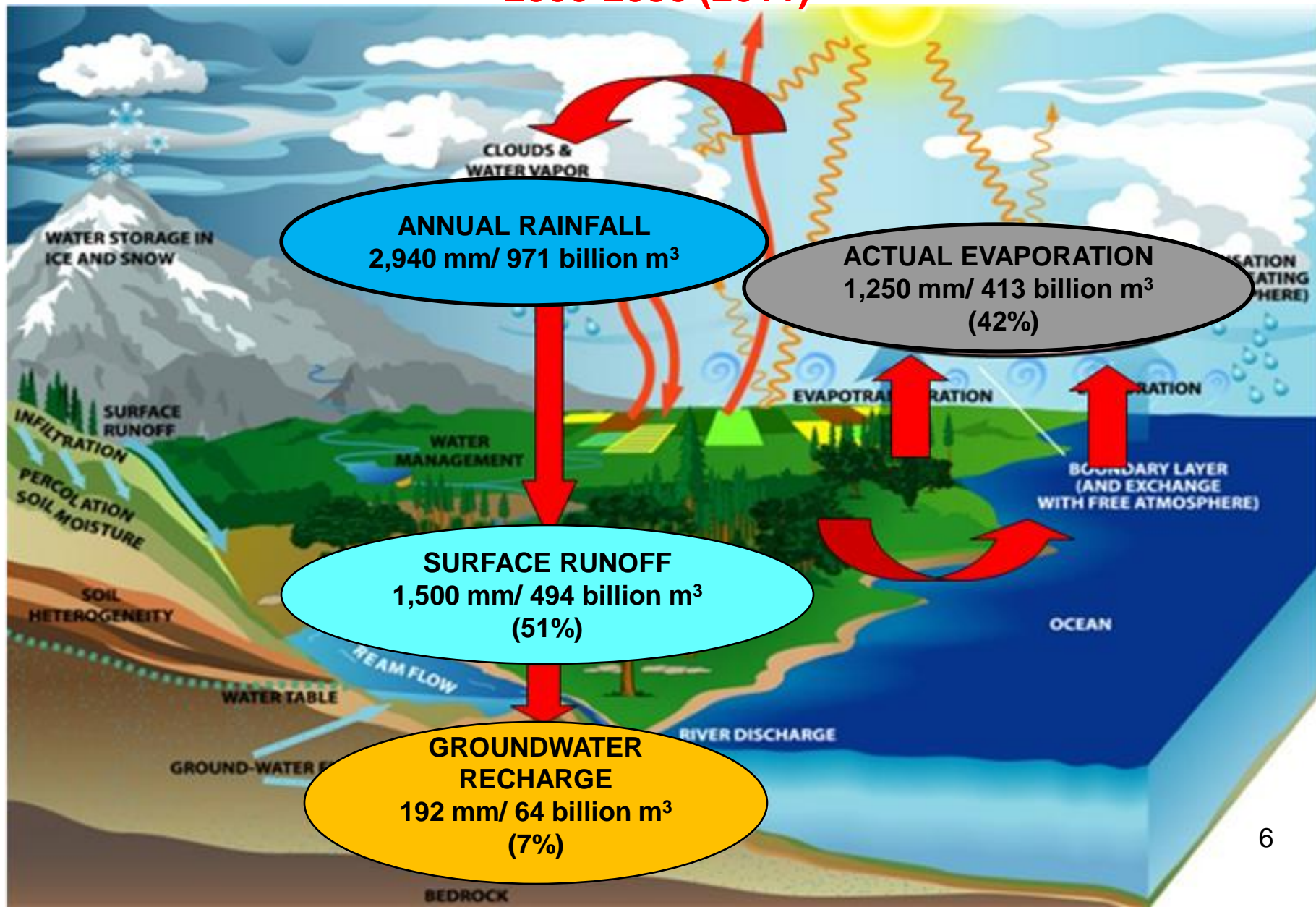
- ***Water for people*** : all have access to safe, adequate and affordable water supply, hygiene and sanitation.
- ***Water for food and rural development*** : provision of sufficient water that will ensure national food security and promote rural development.
- ***Water for economic development*** : provision of sufficient water to spur and sustain economic growth within the context of a knowledge-based economy and e-commerce.
- ***Water for the environment*** : protection of the water environment to preserve water resources (both surface water and groundwater) and natural flow regimes, bio-diversity and the cultural heritage, along with mitigation of water-related hazards.



WATER AVAILABILITY IN MALAYSIA



(Based on The Review of The National Water Resources Study 2000-2050 (2011))



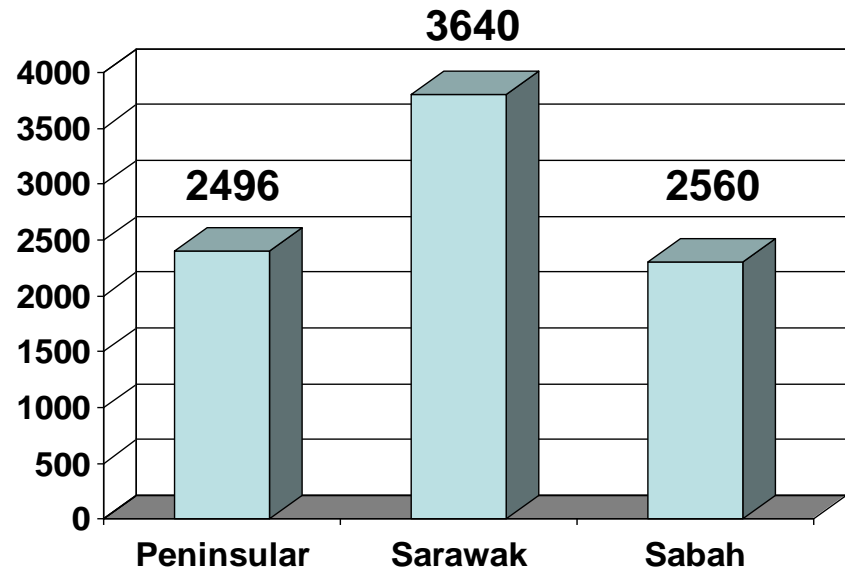


ANNUAL RAINFALL



- **Water is abundant**
- **Excess during wet season but still shortage during dry season**
- **Management Problem?**

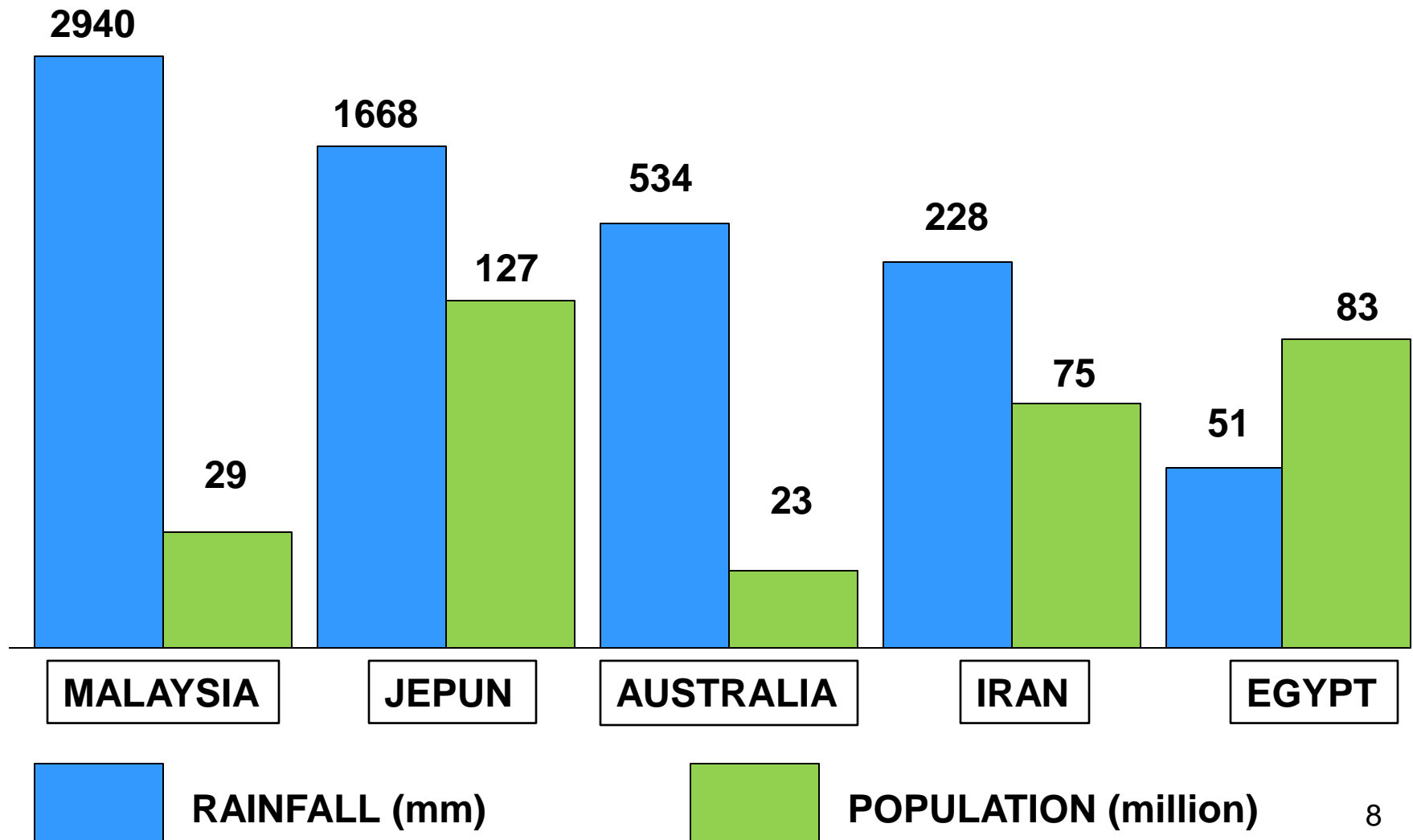
Average Annual Rainfall (mm)



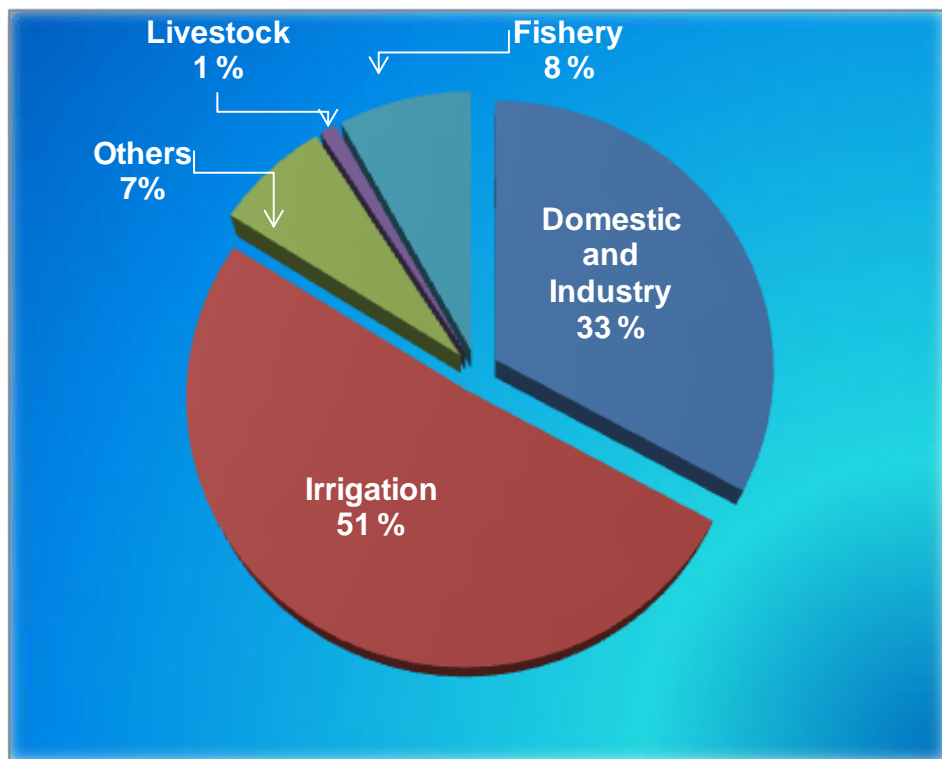
Average Annual Rainfall for Malaysia: 2,940 mm



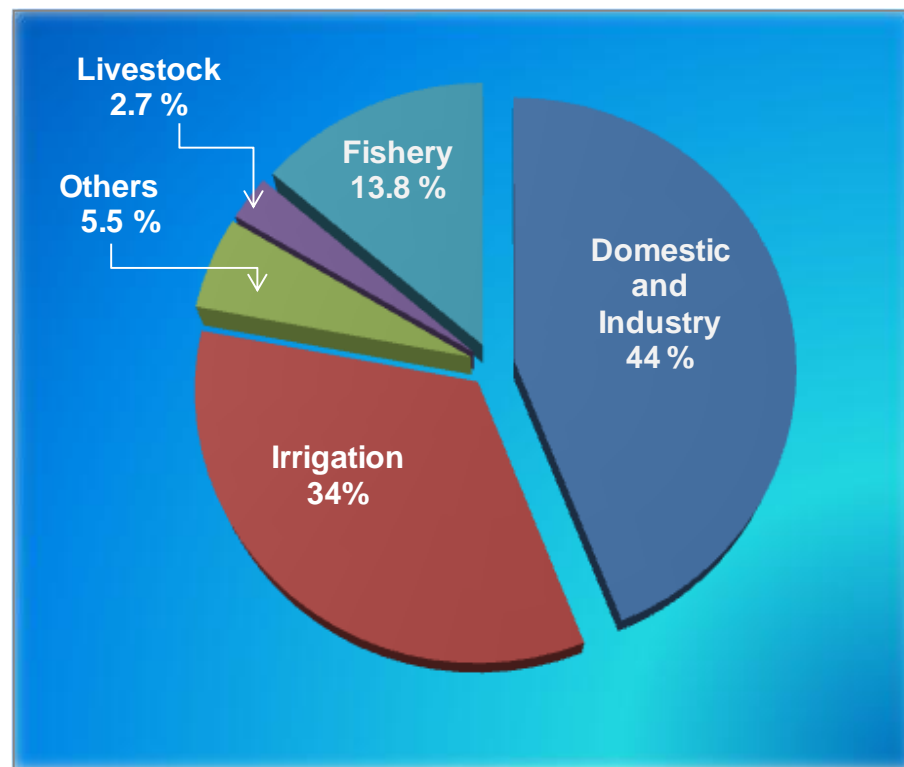
COMPARISON OF ANNUAL RAINFALL AGAINST POPULATION



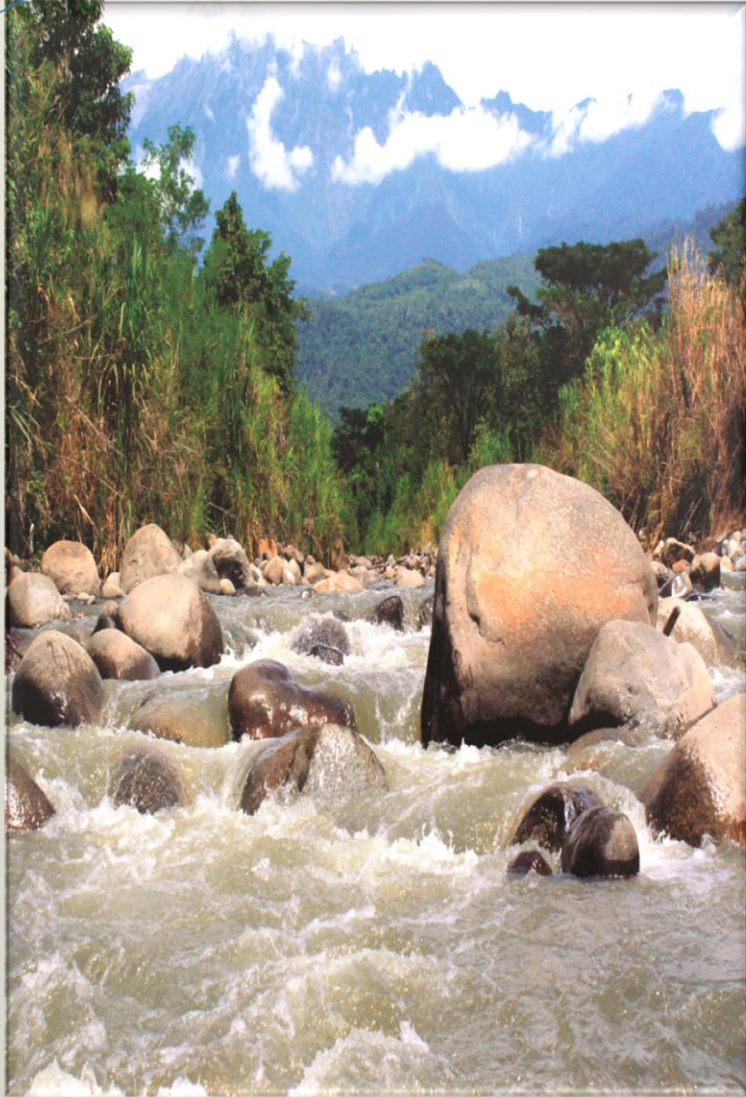
WATER DEMAND BY VARIOUS SECTORS



Demand 2010



Demand Projection 2050



RIVERS
provide
MAIN WATER
SOURCE
for **97 %** of
Water Supply for
Domestic,
Industrial and
Agriculture



WATER ISSUES



ISSUES AND CHALLENGES



- **Water excesses**
- **Water shortages**
- **Water pollution**
- **Threats from climate change**
- **Current state of water governance**



WATER EXCESSES



- About 60% of the annual rain falls in the months of November and January
- Many riverine areas and low-lying areas experience widespread flooding.
- About 9% of the country is flood prone, requiring Government expenditures on flood-relief, flood-rehabilitation and flood-mitigation works to rise significantly in the

Flooding in Kuala Lumpur (7 Mac 2011)



Flooding in Kajang (2 Dec 2011)



Flooding in Hulu Langat (7 Mac 2011)



Flooding in Segamat, Johor (Feb 2011)



Flooding in R/Panjang, Kelantan (Jan 2011)



Flooding in Perlis (Mac 2011)



10 Khamis 3 Februari 11 **NASIONAL**
 BH PILIH 10A 3 (emel)

Mangsa bah di Pahang meningkat

1,777 orang membabitkan 226 keluarga ditempatkan di pusat pemindahan



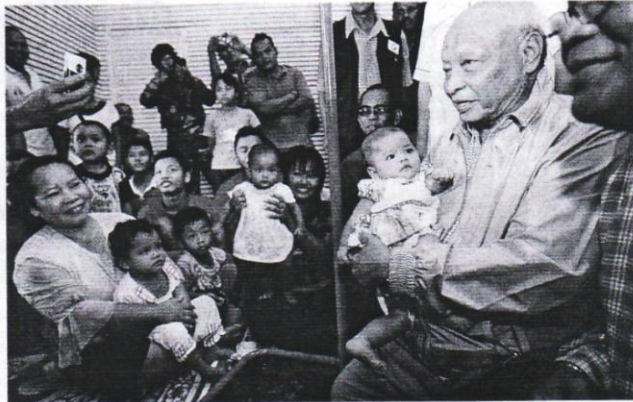
KUANTAN: Jumlah mangsa banjir di negeri ini semalam meningkat kepada 1,777 orang membabitkan 226 keluarga berbanding hampir 800 orang kelmarin.

Jurucakap Bilik Gerakan Banjir Ibu Pejabat Polis Kontinjen (IPPK) Pahang berkata, sehingga jam 5 petang semalam, jumlah berkenaan membabitkan 1,687 orang daripada 204 keluarga di Rompin dan 90 mangsa membabitkan 22 keluarga di Bentong.

Di Rompin, kampung yang terbahit ialah Kampung Rekoh, Bukit Serok dan Kampung Mekam. Mangsa ditempatkan di pusat pemindahan sementara di Balai Raya Kampung Rekoh, Dewan Bandar Tun Razak di Muadzam Shah dan Balai Raya Kampung Mekang.

"Di Bentong pula, membabitkan Kampung Sempadan dan Kampung Jusaf dengan mangsa ditempatkan di Dewan Orang Ramai Lanjut. Di Bentong, bilangan mangsa banjir semalam berjumlah 1,687 orang. Jumlah mangsa banjir semalam meningkat berbanding semalam di Bentong dan Rompin apabila jumlah mangsa di Rompin selepas keadaan kembali reda.

Kelmarin seramai 204



SULTAN PAHANG, Sultan Ahmad Shah bermesra dengan mangsa banjir sambil mendukung Azika Syamiza Aziman, 1, ketika melawat pusat pemindahan banjir di Dewan Bandar Tun Razak, Muadzam Shah, semalam.

mangsa banjir di 13 kampung di Rompin dipindahkan, manakala di Maran, membabitkan 55 mangsa dari 17 keluarga di Kampung Turi, telah kesukaran untuk dijangkau oleh pihak berkuasa. Situasi di Rompin masih memburukkan lagi semalam," katanya.

Sementara itu kira-kira 260 penduduk di tiga kampung di Dewan Undangan Negeri (DUN) Bukit Iban, Rompin terputus hubungan apabila jalan utama meng-

FAKTA NOMBOR

226
penduduk

Tiga kampung di DUN Bukit Iban terputus hubungan akibat jalan utama banjir

hubungan kampung terbahit ditenggelami air sedalam kira-kira tiga meter sejak empat hari lalu. Ahli Dewan Undangan Negeri (DUN) Bukit Iban, Rompin berkata, bekalan makanan untuk kegunaan mereka selama dua hari dan jika keadaan ini berterusan, penghantaran bekalan berkenaan akan diteruskan, tetapi perhatian utama pihaknya ialah aspek keselamatan penduduk.

kedua akan dihantar Jabatan Kebajikan Masyarakat (JKM) pada sebelah petang," katanya selepas melawat penduduk kampung berkenaan.

Flooding in Pahang (Feb 2011)



Flooding in N. Sembilan (Jan 2011)



WATER SHORTAGES



- The seasonal distribution and variation of rainfall, both temporal and spatial, has rendered several regions in the country facing water stress related problems.
- Particularly severe in the smaller States and those that have been more extensively deforested. such as Melaka, Perlis, and Pulau Pinang.



WATER SHORTAGES (cont.)



- Extended periods of droughts cause water supply to fall short of water demands in States supporting large-scale agriculture for rice production such as Perlis, Kedah, and Selangor and those that are heavily industrialised as in the case of Pulau Pinang, Selangor, and the Federal Territories.

- Growing demands and pressure on water resources due to:-
 - population growth (29 mil 2010 → 42 mil 2050)
 - economic activity

Continue..¹⁸



WATER SHORTAGES (cont.)



- Intensifying competition among users.
- High per capita consumption (250 l/c/d) compared to Singapore at 140 l/c/d.
- High non revenue water average 36 %.
- Pollution reduce water usability.
- Per capita availability of water is decreasing.



WATER SHORTAGE - DROUGHT





WATER POLLUTION



- Rivers and waterways are exposed to point and non point sources of pollution.
- A recent estimate puts the wastes dump from the Klang Valley into its river system as amounting to a staggering 60 tons each day.



WATER POLLUTION (cont.)



- Some 90 selected lakes and reservoirs found that about 60% of them are 'eutrophic', primarily from nitrates and phosphates pollution originating from fertiliser and pesticide use in agriculture.
- Water resource management in these instances clearly needs to reach out beyond the water boundaries and have an involvement in land, forests and environment control management affairs.

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WATER POLLUTION (cont.)



Polluters

- Cities/ Industries
- Agricultural/Livestock activities
- Land clearance



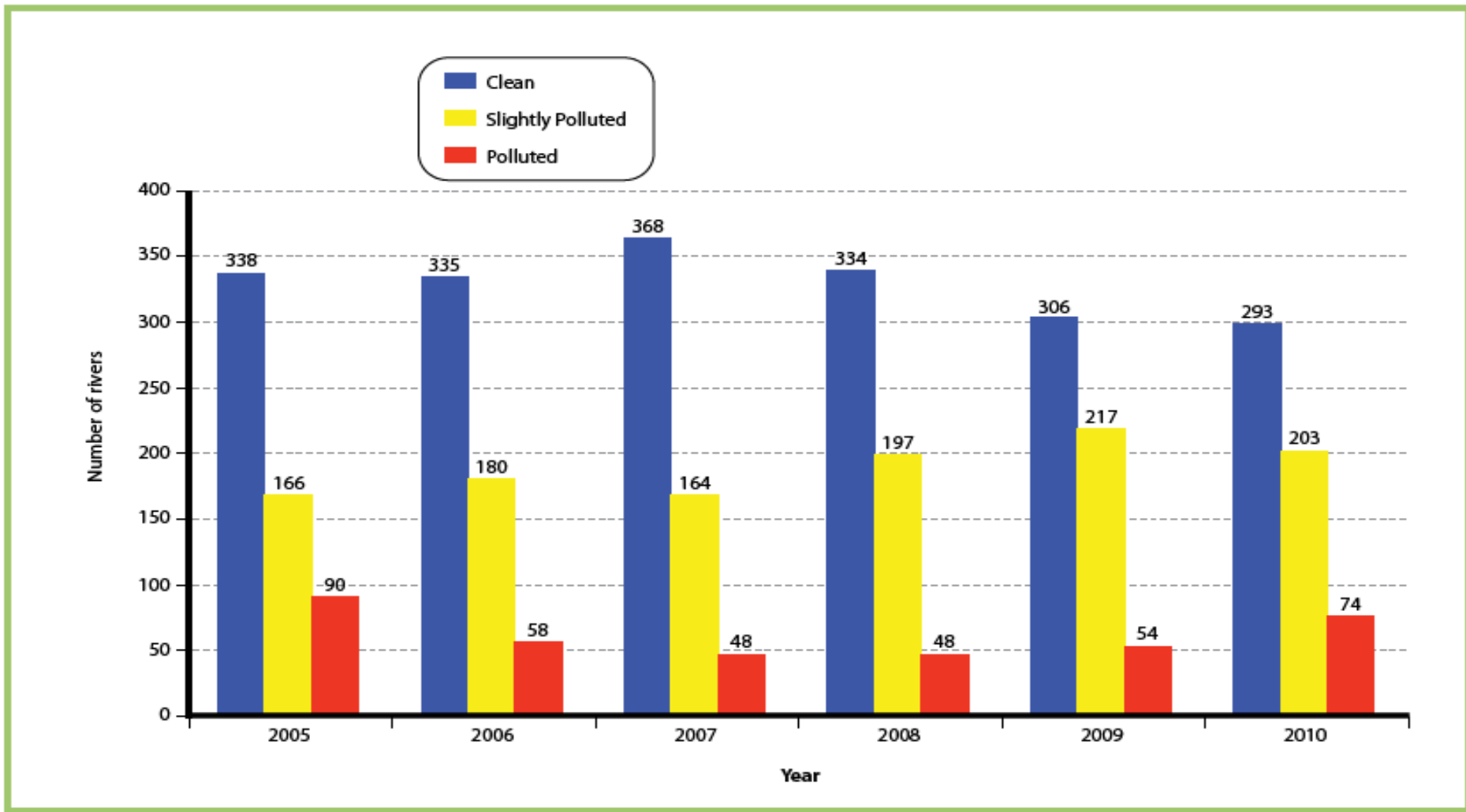
Affects

- water supply services
- human health
- aquatic ecosystems





RIVER WATER QUALITY TREND IN MALAYSIA





THREATS FROM CLIMATE CHANGE

- Global warming created extreme variability in the climate
- This impact causes sea level to rise and further extremes in the flood and drought situations of the country (NAHRIM's Study: SLR of 0.1 to 0.13 cm per yr; river flow may increase by 20 – 40% by 2100)



STATE OF CURRENT WATER GOVERNANCE



- There is **no single formally constituted entity** that is presently *empowered* to plan, coordinate, and execute IWRM.
- The National Water Resources Council (NWRC), whilst constituting a good coordinating body for water affairs, **has not been provided with legal mandate** for carrying out this function.



STATE OF CURRENT WATER GOVERNANCE (cont.)



- Water is a state matter
 - gazette of water catchments
 - control our development

- No uniformity in water resources legislation in the states



STRATEGIC APPROACH



- **REVISIT THE INTEGRATED WATER RESOURCES MANAGEMENT (IWRM) INITIATIVES AND IMPLEMENTATION**

- **CONCEPT 1 WATER**





WHY IWRM?

- Growth in population, increased economic activity and improved standards of living lead to increased competition for and conflicts over limited freshwater.
- A combination of social inequity and economic marginalisation forces people to overexploit soil and forestry resources, with damaging impacts on water resources.



WATER BALANCING ACT



Supply

- Quantity
- Quality
- Costs of options

Demand

- Increasing in all sectors
- Inefficient use

IWRM

A balance between conditions for sustainable development (national interest) and desirable socio-economic development (public interest) with ecological conditions (environmental integrity)



IWRM COMPONENTS





IWRM IMPLEMENTATION

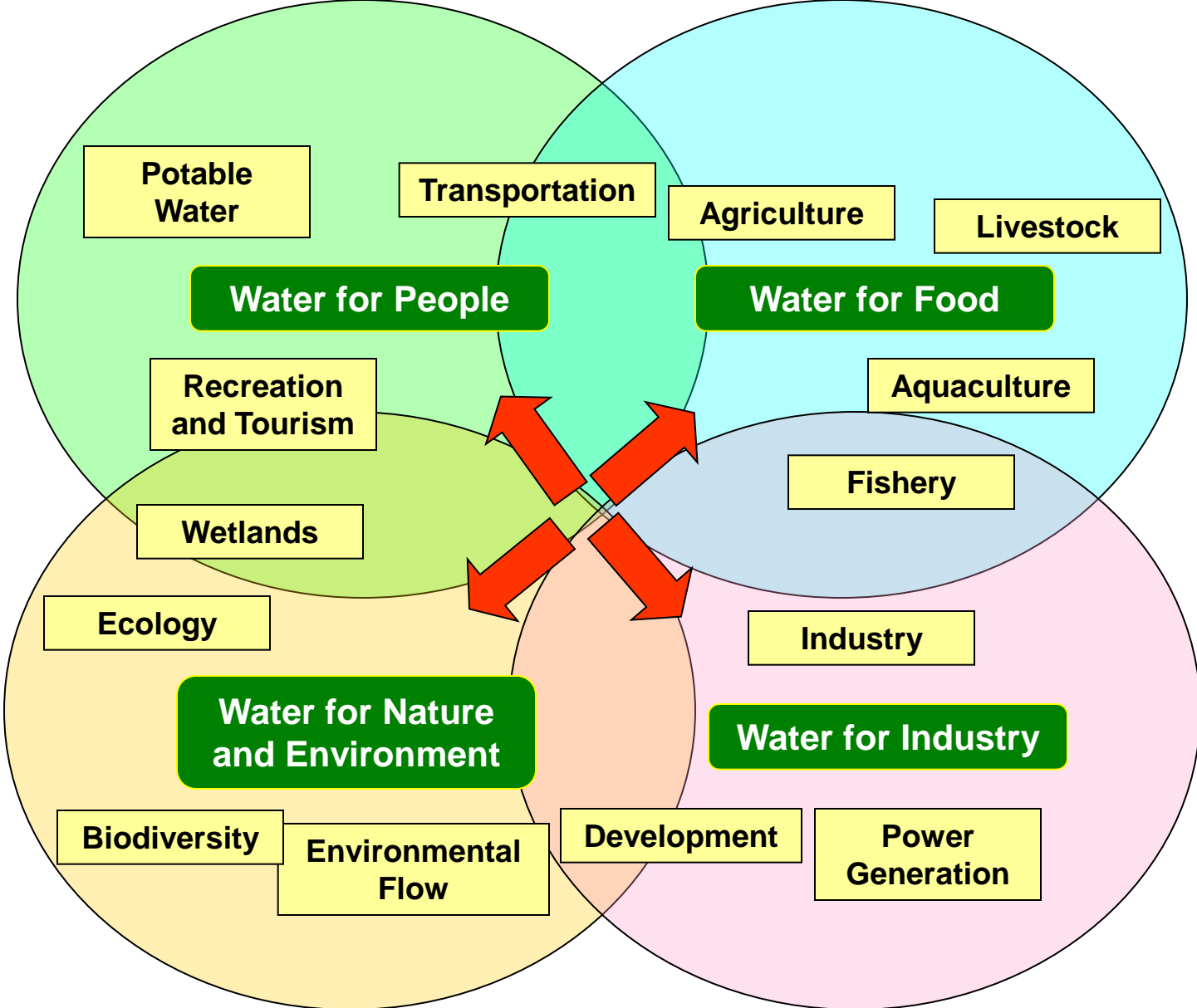


- **Restrategise water management**
 - strengthened legal and institutional arrangements

- **Scope of IWRM is wide**
 - integration of natural and human systems
 - is both a science and art
 - involves everybody



Integrated Approach in Managing Water Demand





WHAT HAVE BEEN DONE AND WHAT MORE NEED TO BE DONE...

1. Formation of the National Water Resources Council (NWRC)- 1998

- Chaired by Deputy Prime Minister
- Pursue effective water management and services
- Involvement of Federal and State Government in the water sector
- Formulation of IRBM Master Plans for all river basins



(cont.)



2. Policy

- National Water Resources Policy have been formulated and launched on 24 March 2012.
- Principles of IWRM have been incorporated into five-year development plans since the 8th M'sia Plan
- Sectoral policies related to water resources and water services



3. Legislation

- Federal Constitution amended in Jan 2005 to shift water services from state list to concurrent list
- New law on Water Services Commission passed by Parliament in 2007
- 2008 – Water Services Industry Act enforced
- 2012- National Water Resources Act drafted (currently in consultation process)



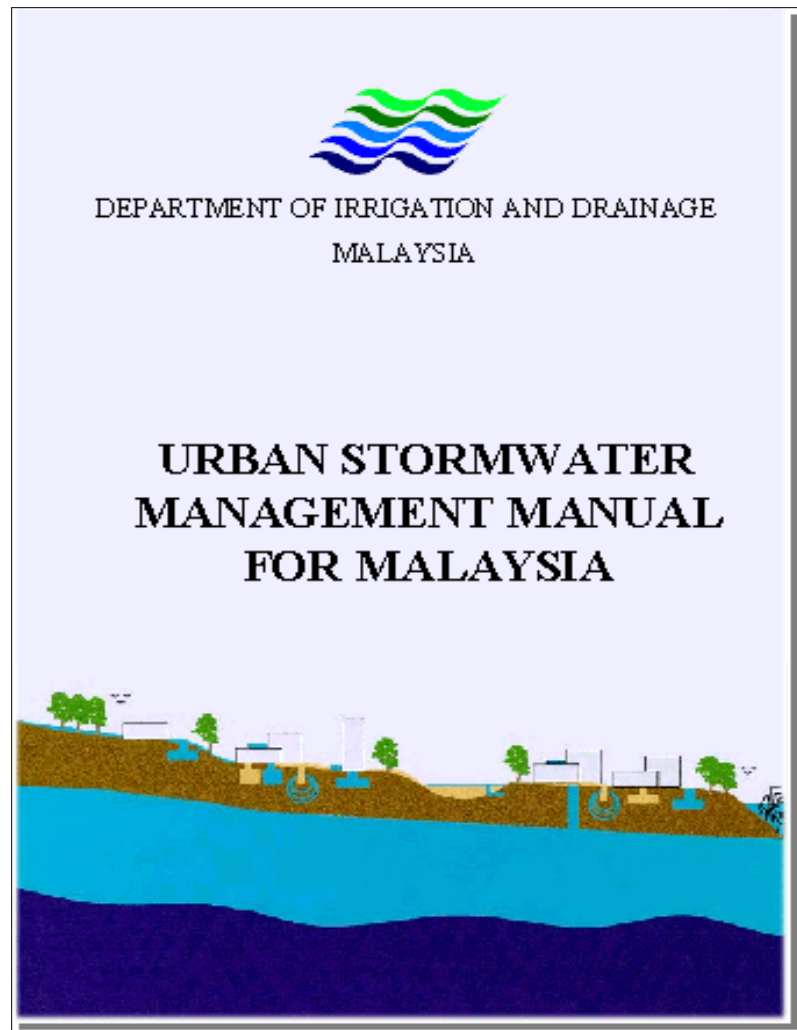
4. Apex Bodies formed



- Selangor Waters Management Authority (LUAS) - formed on 1st August 2000 - aim of adopting and implementing IWRM/IRBM at the river basin level within the State of Selangor, besides conserving coastal resources and the environment.
- Water Resources Department of Sabah.
- Natural Resources and Environment Board (Sarawak).
- Kedah Water Management Board (LUAN) – yet to be fully implemented.



5. Storm water Management Manual – 2nd Edition (2011)

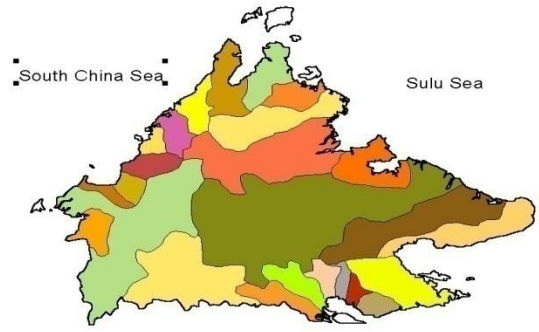
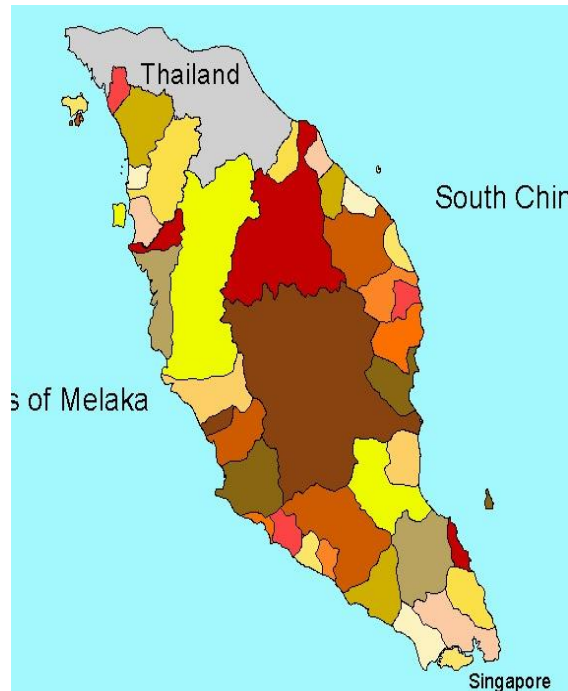


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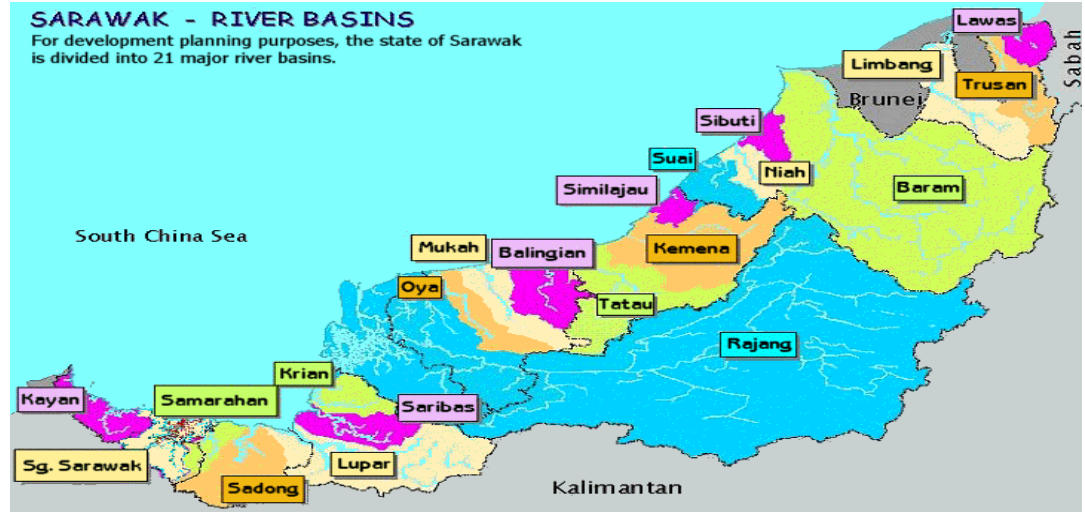


6. Water Plans

In 29 July 2003, NWRC agreed to the preparation of IRBM plans for all 189 river basins in country



SARAWAK - RIVER BASINS
For development planning purposes, the state of Sarawak is divided into 21 major river basins.





7. Civil Society

- Malaysian Water Partnership (MyWP) formed in Nov 1997.
- The Malaysian Capacity Building Network for IWRM (MyCapNet)

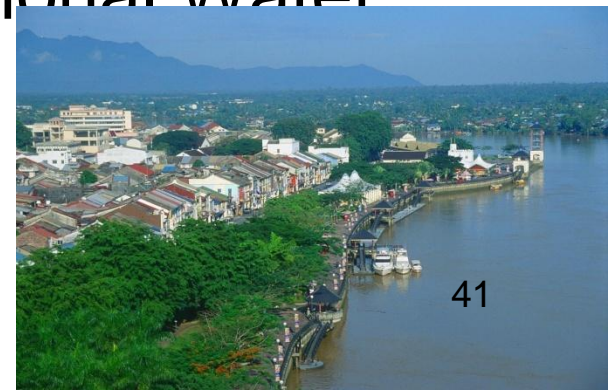


8. Studies



- i. Study on Integrated Catchment Management of Sungai Damansara, 2003.
- ii. National Study for the Effective Implementation of IWRM in Malaysia (2005)
- iii. Integrated Water Resources Study for Northern Region of Peninsular Malaysia (2008)
- iv. Review of the National Water Resources Study (2000-2050) and Formulation of National Water Resources Policy-2011
- v. Sarawak IWRM Masterplan Study (2004)

Continue..





9. River Basin Master Plans – (basis for development within a river basin) – 1998.

10. Capacity Building

- MSc course on IWRM (Open University since 2005)
- Training modules for senior executives of the public sector (since 2005)

11. National and international forum/training workshop on IWRM as annual events

Continue.. 43



12. National Sewerage Project

- National Strategic Plan for Solid Waste Management (since 2002)





**13. Guidelines of installing:
Rainwater Collection and Utilisation System
(1999) and**

14. National Recycling Campaign 2002

Continue..45

15. Implementation Of Best Management Practices BMP In Awareness Raising And Capacity Building Towards The Effective Implementation Of IWRM In Malaysia

- create awareness and generate advocacy in IWRM throughout the country;
- facilitate capacity building among key implementing agencies that are involved in IWRM; and
- develop and demonstrate Best Management Practices (BMPs) in IWRM that are appropriate to the Malaysian context.



(cont)

- The study has identified 9 BMP's as follows:

RANKING	Water Related Issues/ Themes
1	River Water Quality
2	Catchment/ Landuse Management
3	Flooding
4	Institutional Arrangement
5	River Corridor Management
6	Wetlands Management
7	Water Borne Diseases
8	Biodiversity
9	Ground Water



SELECTED SITES FOR BMPS



1. Sungai Liwagu, Sabah - “Sabah Water Resources Enactment 1998” (DID) & ‘Kawalan Kegunaan Racun’ (Jabatan Pertanian) + Local Farmers & community
2. Tasik Cini, Pahang – Catchment & Wetland Management (Poverty Eradication) (SUSDEN, Wetland International & Local Community)
3. Matahari Height, Seremban - Flood – Flood Detention Pond as Community Park (DID, MPS & Local Community)
4. N-Park Condominium, P. Pinang - “Nega Litres” – Water Saving (Water Watch Penang & Pinang Water Board)
5. Lembangan Sg Miri, Sarawak – River Basin Management Institution (Miri Agenda 21 Group, DID, MP Miri)

Continue..



SELECTED SITES FOR BMPS



7. Sg Melaka, Alor Gajah – River Corridor management – Political Advocacy (DID, MP Alor Gajah, Pn Hjh Hasnah & Local Community)
8. Sg Langat, Selangor - WaterBorne Diseases Management (Universiti Malaya – UH)
9. Alor Baung, Kota Bharu – Groundwater Management (DID, Jab Mineral & Geosains, Kelantan Water Supply Board)
10. Sg Galing Besar, Kuantan – River Corridor Management – Regulating pollution sources (DID, MPK & Local Community)



CHALLENGES IN IWRM IMPLEMENTATION



- What has to be integrated?
- How is it best done?
- Who is going to bear the cost?





IWRM OBJECTIVE : RESTORATION & TRANSFORMATION



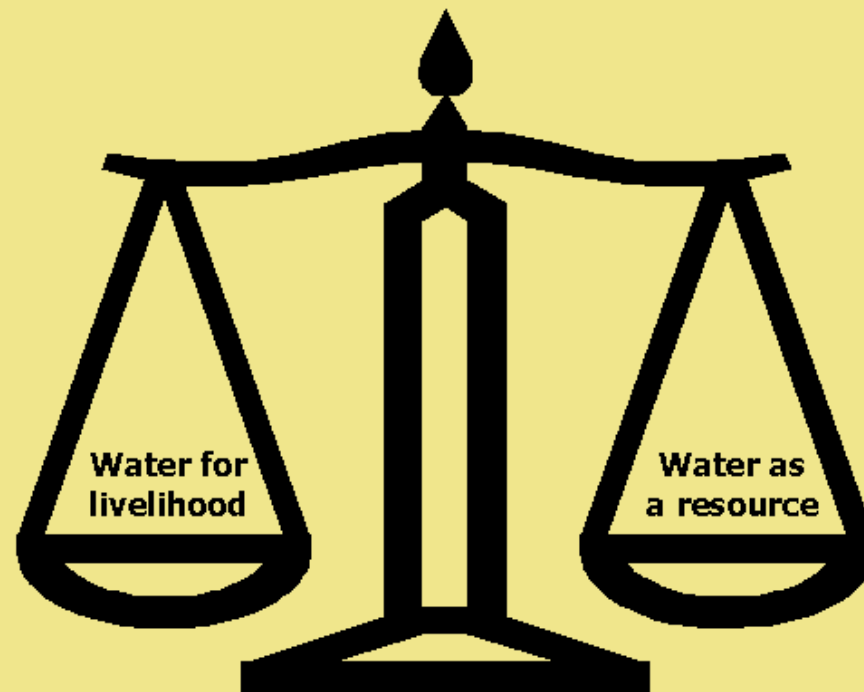
Degraded environment of water resources, river basins



controlled planning & development activities through best environmental management practices for sustainable development & management of water resources & river basins



Water for livelihood and Water as a resource must be balanced



Water and sanitation for
PEOPLE

Rainfall and irrigation water
for FOOD

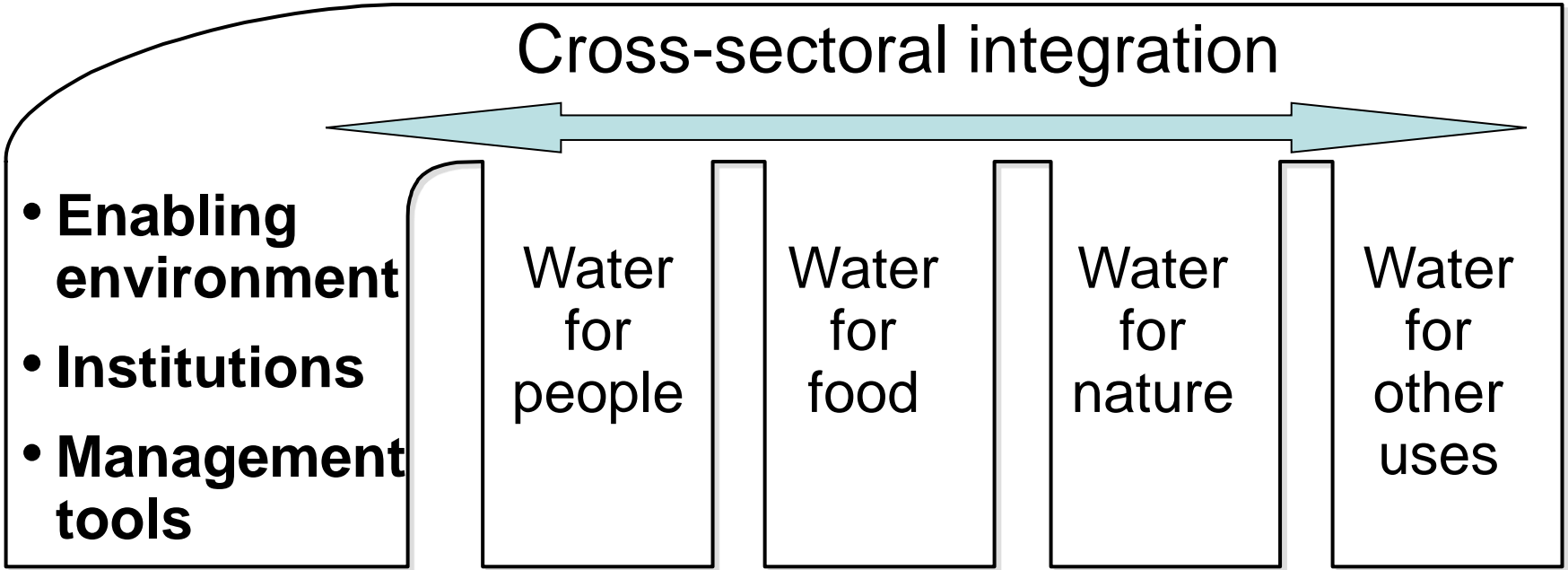
Water for the economic
functions of ECOSYSTEMS

...while...

Maintaining the RESOURCE BASE,
both surface and ground water, and
biodiversity



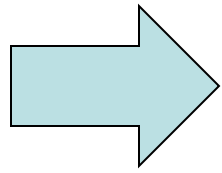
IWRM is about managing competing uses - across interests and sectors!



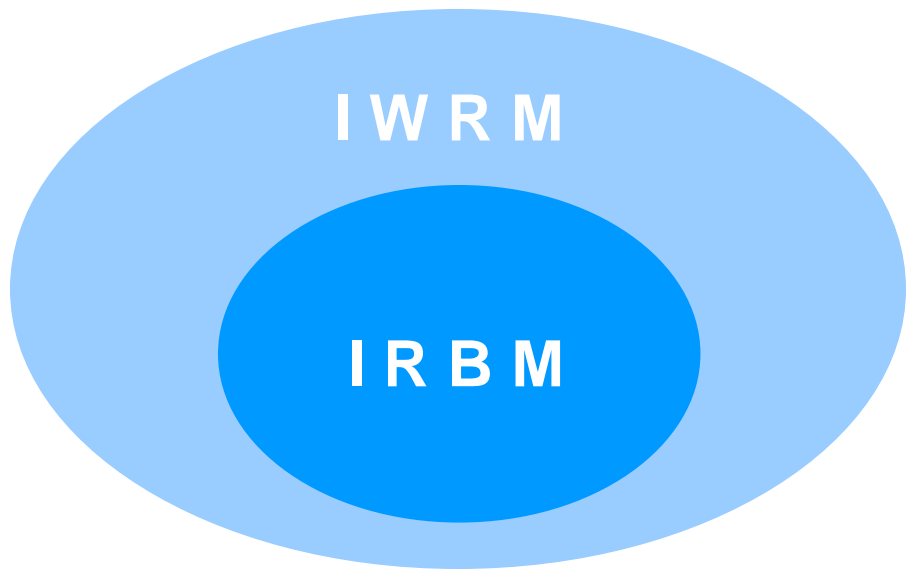
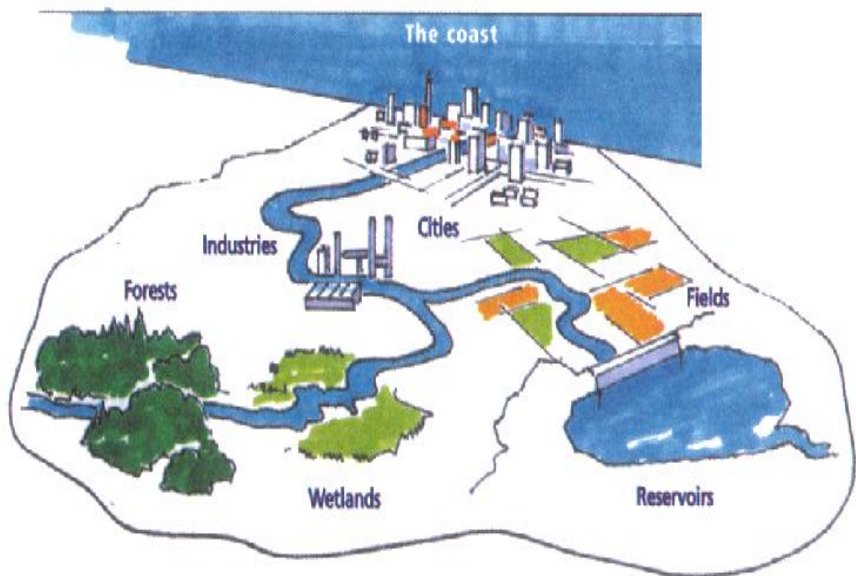
**-and by building compromises through stakeholder participation
HOW? HOW? HOW?**



IWRM respects the principle that water follows its own boundaries!



and builds on river basin management



-From small local basins to large international river basins!

from a **water quantity** and **water quality** perspective

WAY FOWARD



THE WAY FORWARD



- The need for **political will** to implement all the national water resources programmes.

- Focus on the implementation of the National Water Resources Policy.

- Speed up formulation of National Water Resources Act.
 - Need for uniformity in water resources enactment at state level.



THE WAY FORWARD (cont.)



- Rebranding JPS to become Water Resources Department at National and State level.
 - Currently JPS is performing about 60% of functions related to water resources management.

- Shift to water demand management approach
 - Increasing water delivery efficiency
 - Reducing water wastage

- Paradigm shift in tariffs
 - current tariff too low



THE WAY FORWARD (cont.)

- More involvement of Federal Government in water resources and water services management.
 - Technical advice
 - Research
 - Capacity building

- Need for sustained and adequate financing for the development of all water related programmes.

CONCLUSION



CONCLUSION



- Effective implementation of IWRM contributes to the realization of water security and water sustainability for Malaysia.
- Water resources is a vital national heritage to be sustainably conserved and preserved
- The importance of managing river basins according to physical boundaries
- Involvement of Federal Government in national water sector can expedite IWRM implementation.
- IWRM is achieved by partnerships and collaboration.



THANK YOU

DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES
NATIONAL WATER RESEARCH INSTITUTE