

Malaysia Water Resources Management Forum 2012
Perbadanan Putrajaya, Putrajaya



SURUHANJAYA PERKHIDMATAN AIR NEGARA (SPAN)
MALAYSIA

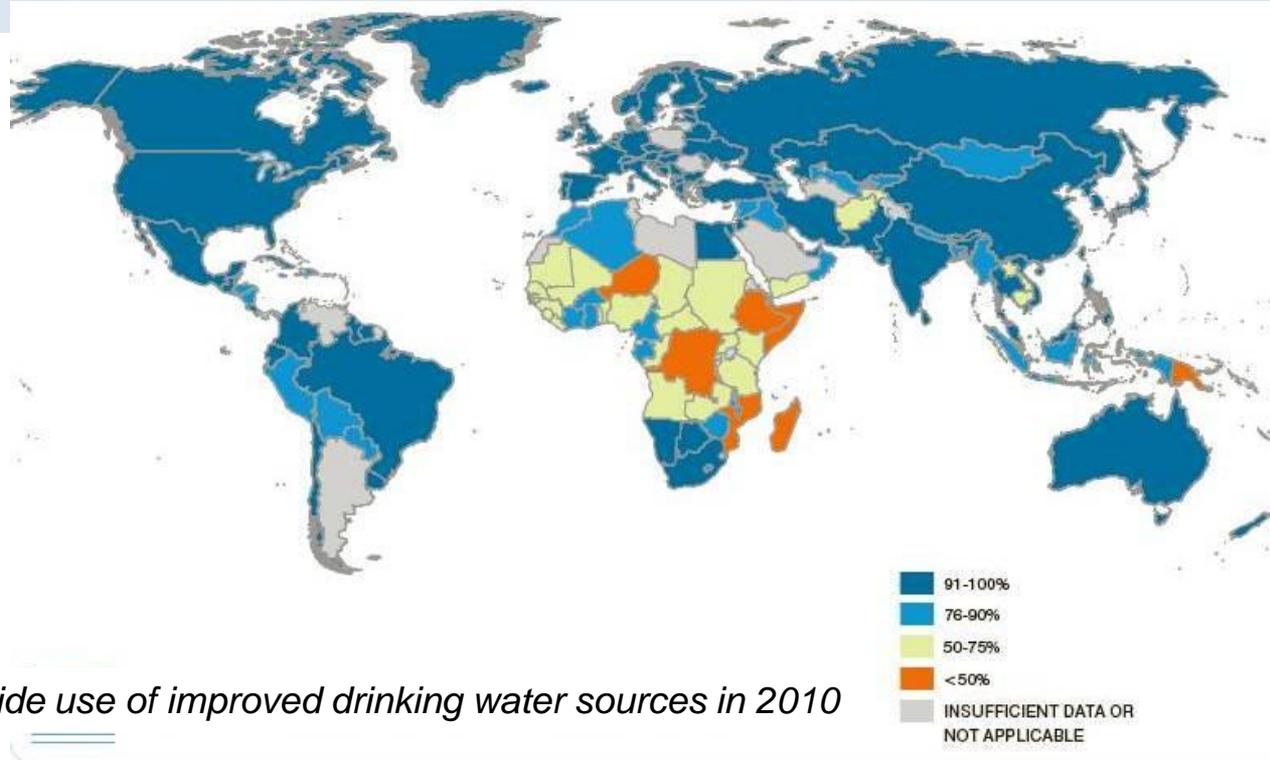
27 November 2012



Scope of Presentation

- **Introduction**
- Water for People and Industry
- Pollution Issues
- Strategies to Move Forward
- Conclusion

Progress of Drinking Water in Malaysia

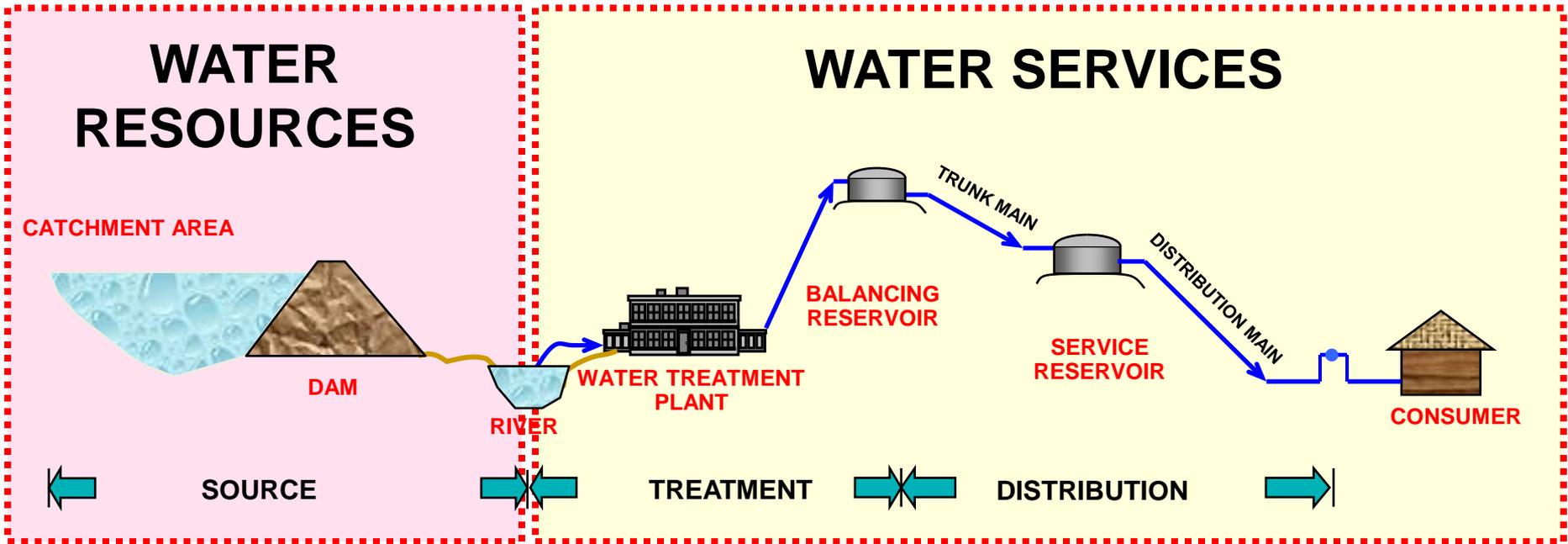


Worldwide use of improved drinking water sources in 2010

- Population in Malaysia having access to safe drinking water in 2010
 - Urban: 100%, Rural : 99%, Total : 100% (Source: WHO)
- Population in Malaysia having access to piped water in 2011
 - Urban: 96.8%, Rural : 90.1%, Total : 94.4% (Source: MWIG 2012)
- Malaysia has met the drinking water target of Millennium Development Goals (Progress Report on Sanitation and Drinking Water, 2012 Update, WHO & UNICEF)



Water Resources vs Water Services



Before 2005 Federal Constitution Amendment

STATE

FEDERAL

After 2005 Federal Constitution Amendment

What Are The Reforms That Have Taken Place?

- ✓ Coming into effect of the 2 Acts i.e.
 - Water Services Industry Act 2006 (WSIA 2006) - to **govern the water services industry** from treatment of raw water to discharge of waste water
 - National Water Services Industry Act 2006 (SPAN Act)- to **establish a national regulator** for the water services industry
- ✓ Establishment of Water Reform Business Model
- ✓ Enhancement of Regulatory Framework

Institutional reforms

BODY	AREA OF RESPONSIBILITY	DESCRIPTION
Federal Government (Ministry of Energy, Green Technology and Water)	Policy matters	Development of a holistic water policy for the country by setting policy directions.
State Governments	Raw water matters	Regulate raw water abstraction and catchment management
National Water Resources Council (NWRC) – chaired by Prime Minister	Water resource matters – cross boundaries/inter state/issues of national interest	Ensures coordination between various State Governments in the management of river basins.
National Water Services Commission (SPAN)	Regulatory matters	Regulate water services industry (water and sewerage services)
Pengurusan Aset Air Berhad (PAAB)	Development of water assets	Owner of water assets, provide funding CAPEX for development of water assets and maintain, upgrade and repair water infrastructure systems
Water Operators	Operation of water assets	Treat and supply treated water to consumer

State Raw Water Regulatory Bodies (Water Resource)

	State	Name
1.	Selangor	Lembaga Urus Air Selangor (LUAS)
2.	Johor	Badan Kawal Selia Air Johor (BAKAJ)
3.	Melaka	Badan Kawal Selia Air Melaka (BKSAM)
4.	Negeri Sembilan	Badan Kawal Selia Air Negeri Sembilan (BKANS)
5.	Kedah	Lembaga Sumber Air Negeri Kedah (LSAN)
6.	Pulau Pinang	Badan Kawal Selia Air Pulau Pinang (BAKSA)
7.	Kelantan	Jabatan Air Kelantan (JAK)
8.	Trengganu	Badan Kawal Selia Air Trengganu
9.	Pahang	Badan Kawal Selia Pahang

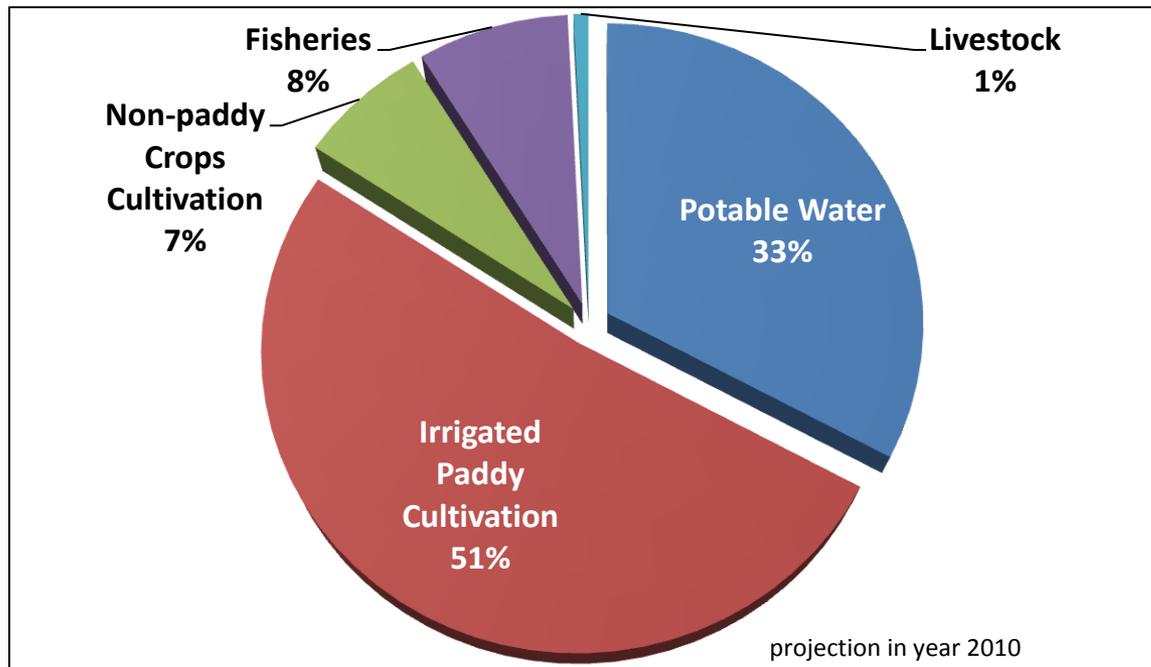


Scope of Presentation

- Introduction
- **Water for People and Industry**
- Pollution Issues
- Strategies to Move Forward
- Conclusion

Projected Water Demand For All Sectors in Malaysia 2010 to 2050

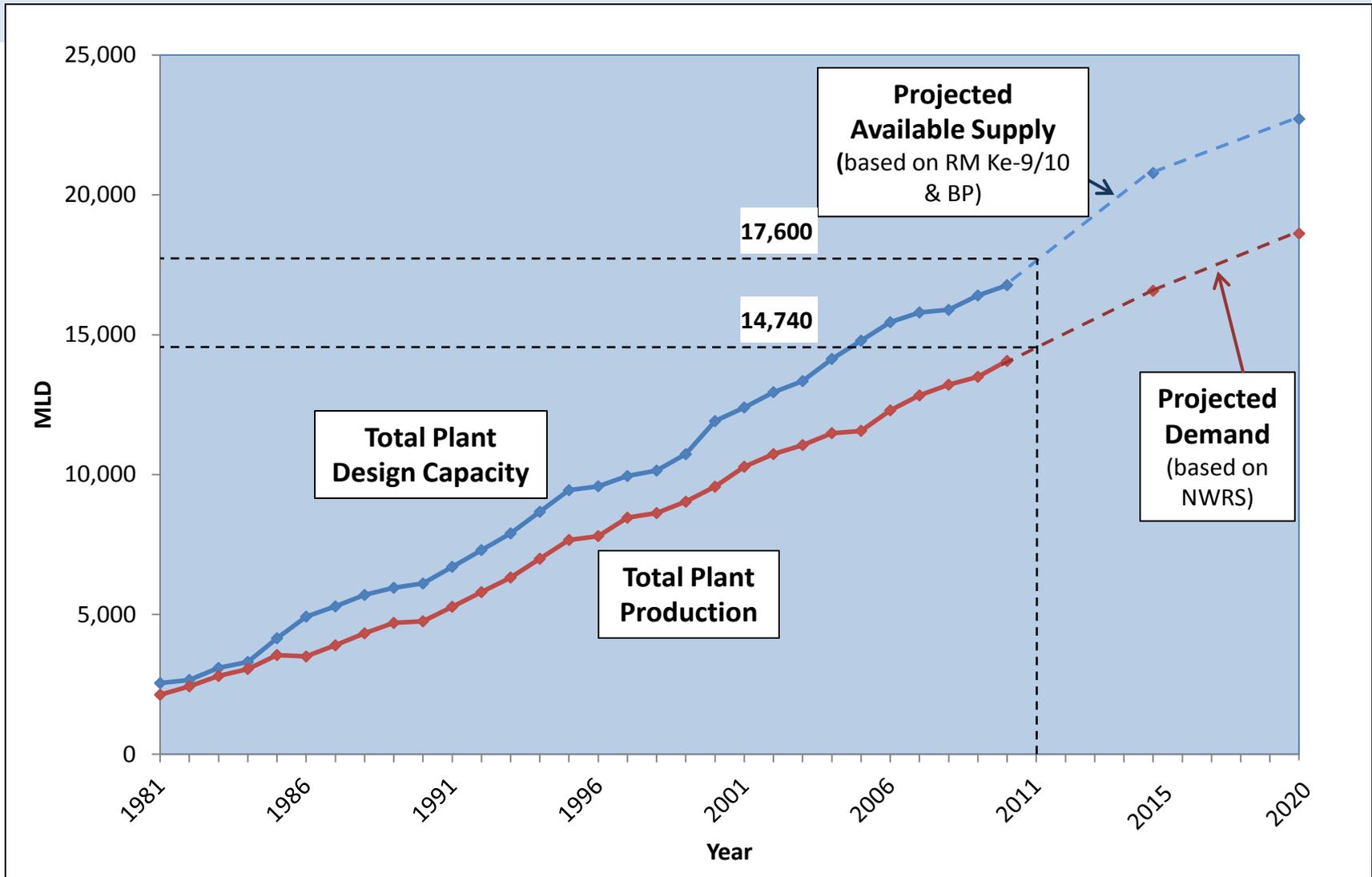
Water Demand	Million Cubic Meter (mcm) per Year					
	Year	2010	2020	2030	2040	2050
Potable Water		5,277	6,796	7,663	8,529	9,291
Irrigated Paddy Cultivation		8,266	9,112	8,049	7,641	7,205
Non-paddy Crops Cultivation		1,117	1,123	1,113	1,150	1,176
Fisheries		1,287	1,593	1,923	2,390	2,898
Livestock		129	180	256	379	578
Total		16,076	18,804	19,004	20,089	21,148



Notes:

Source of data : The Review of the NWRS 2000-2050

Overview on Current and Future Water Supply and Demand until 2020



Notes:

Source of data (1981 to 2010) : The MWIG 2011

Raw Water Resources For Potable Water 2010 and 2011

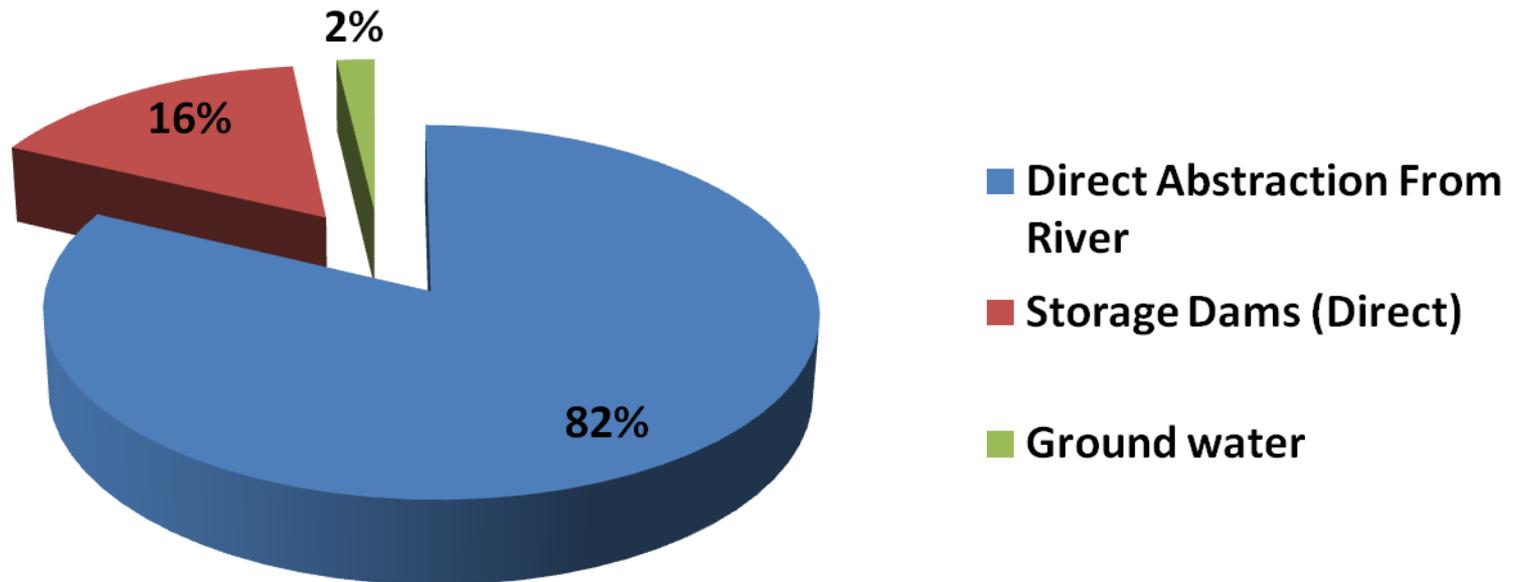
State	2010				2011			
	MLD				MLD			
	Direct Extraction From River	Storage Dams (Direct)	Ground Water	Total	Direct Extraction From River	Storage Dams (Direct)	Ground Water	Total
Johor	979	566	N/A	1,545	977	624	N/A	1,601
Kedah	1,277	15	N/A	1,292	1,328	13	N/A	1,342
Kelantan	226	N/A	150	377	239	N/A	164	403
Labuan	39	12	0.3	51	60	10	1	71
Melaka	298	214	66	512	312	216	N/A	528
N. Sembilan	466	374	N/A	840	543	344	N/A	886
Pulau Pinang	1,011	78	N/A	1,089	1,002	75	N/A	1,077
Pahang	1,035	N/A	28	1,063	1,051	N/A	29	1,080
Perak	884	447	N/A	1,331	878	476	N/A	1,354
Perlis	106	44	5	156	143	41	7	191
Sabah	707	272	19	999	710	275	22	1,006
Sarawak	1,006	109	0.4	1,115	1,003	116	0.3	1,119
Selangor	4,014	144	N/A	4,158	4,058	163	N/A	4,221
Terengganu	467	177	N/A	644	442	188	N/A	630
MALAYSIA	12,516	2,451	204	15,171	12,746	2,540	223	15,509

Notes:

Selangor includes FT KL & Putrajaya

Source of data (year 2011) : The MWIG 2012

Distribution of Raw Water Resources For Potable Water - 2011



Scope of Presentation

- Introduction
- Water for People and Industry
- **Pollution Issues**
- Strategies to Move Forward
- Conclusion

Pollution Issues - Situations

- Source polluted
 - Oil/chemical
 - Industrial and domestic waste
- Deterioration of the raw water quality due to surrounding development
- Climate Change – extreme whether - heavy rain (flooded, high turbidity), drought (less flow, less dilution)

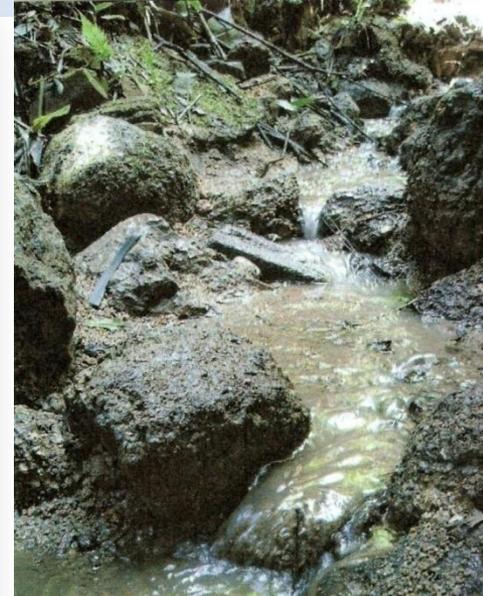
Closure of Treatment Plants Due to Pollution & Flood (2012)

DATE	NAME OF WTP	CAUSE OF POLLUTION	SOURCE	AREAS AFFECTED
25 – 27 Jan 2012	Cheras Bt. 11 WTP	High Fluoride	Unknown	Kuala Lumpur
24, 25 & 29 Feb 2012	Sg. Selisik WTP	High Ammonia Nitrogen	Rubber Factory effluent, Chicken Farm and other factories	Hulu Selangor
25 Feb 2012	Semenyih WTP	High Ammonia Nitrogen	Leachate from Sanitary Landfill	Bangi & Kajang
29 Feb 2012	Semenyih WTP	High Ammonia Nitrogen	Leachate from Sanitary Landfill	Bangi & Kajang
1 to 6 Mac 2012	Kuala Terla WTP, Cameron Highlands	Pesticide	Fishing activity	Cameron Highlands
7 Mac 2012	Cheras Bt. 11 WTP	Diesel	Quarry	Kuala Lumpur

Closure of Treatment Plants Due to Pollution & Flood (2012).... Cont'd

DATE	NAME OF WTP	CAUSE OF POLLUTION	SOURCE	AREAS AFFECTED
7 Mac 2012	Ampang Intake WTP	High Turbidity	Flood	Kuala Lumpur
8 Mac 2012	Langat WTP	High Turbidity	Flood	Kuala Lumpur
25 Mac	Semenyih WTP	High Ammonia Nitrogen	Leachate from Sanitary Landfill	Bangi & Kajang
10 April	Semenyih WTP	High Ammonia Nitrogen	Leachate from Sanitary Landfill	Bangi & Kajang
26 April	SSP2 WTP	High Ammonia Nitrogen	Leachate from Sg. Air Hitam	Kuala Lumpur
Oct & Nov 2012 (4 days)	Langat WTP	High Turbidity	Flood	Kuala Lumpur

Incidences Related to Water Source Causing Water Disruption



31st July 2010

- Tanker skidded at Bt 12 Jln Tapah – Cameron Highlands causing fuel to spill and drained into Sg. Batang Padang, source for Bkt Temoh WTP
- Shutdown of plant cause disruption of supply to Batang Padang, and Hilir Perak Districts with > 45,000 consumers for 7 days

Incidences Related to Water Source Causing Water Disruption



7th March 2012

- Shutdown of Ampang Intake WTP because of high turbidity caused by flood

Incidences Related to Water Source Causing Water Disruption



25th March 2012

- Shutdown of Semenyih WTP because of ammonia pollution caused by leachate from Sanitary Landfill in Pajam

Incidences Related to Water Source Causing Water Disruption



25th March 2008

- Treated water main from Semenyih WTP (1,200 mm dia.) damaged due to erosion caused by illegal sand mining activities near Sg. Langat river bank at Kg. Jenderam Hilir, Dengkil
- Disrupted supply to Bangi, Bukit Mahkota and surrounding areas in Kuala Langat with > 350,000 consumers

Pollution Issues - Consequences

- Polluted water difficult to be treated
 - More water treatment chemical needed
 - Increase operating cost
 - Health risk due to excessive use of chemical
- Sometimes cannot be treated
 - Oil and grease
 - High concentration of chemicals or organic content (TOC)

Pollution Issues - Consequences

No Supply At All

(affecting the public & lost of revenue)

or

Supply With High Risk of Non-Compliance with the National Drinking Water Standard

Pollution Issues – Existing Limitations

- Existing limitations to treat polluted water:
 - Conventional Treatment System
Inability to treat polluted raw water
 - Design Capacity
Plant which operates beyond design capacity or overloading

DESIGNED AND DISTRIBUTABLE CAPACITY OF WATER TREATMENT PLANTS IN SELANGOR, WP KUALA LUMPUR AND PUTRAJAYA

NO.	WATER TREATMENT PLANT	DESIGN CAPACITY (MLD)	DISTRIBUTABLE CAPACITY (MLD)
1	BUKIT NANAS	145.00	145.00
2	WANGSA MAJU	45.00	45.00
3	BRH	65.50	40.60
4	RANTAU PANJANG	31.50	31.50
5	CHERAS MILE 11	27.00	27.00
6	SUNGAI SIREH	27.00	27.00
7	NORTH HUMMOCK	22.50	22.50
8	GOMBAK	22.50	22.50
9	BATANG KALI	20.30	20.30
10	AMPANG INTAKE	18.00	18.00
11	SALAK TINGGI	10.80	10.80
12	SUNGAI RANGKAP	9.00	9.00
13	KALUMPANG	6.70	6.70
14	KUALA KUBU BHARU	6.70	6.70
15	SUNGAI RUMPUT	2.30	2.30
16	LOLO BARU	2.50	3.00
17	KEPONG	4.50	4.50
18	SUNGAI PANGSOON	1.80	1.80
19	SUNGAI DUSUN	1.30	1.30

NO.	WATER TREATMENT PLANT	DESIGN CAPACITY (MLD)	DISTRIBUTABLE CAPACITY (MLD)
20	SUNGAI SELISEK	1.30	1.30
21	SUNGAI TENGI	1.30	1.30
22	SUNGAI BUAYA	0.90	0.90
23	SUNGAI SERAI	0.90	0.90
24	AIR KEROH	0.50	0.50
25	SUNGAI LOLO	0.40	0.40
26	SUNGAI SELANGOR SSP2	950.00	965.00
27	SUNGAI SEMENYIH	545.00	665.00
28	SUNGAI LANGAT	386.00	472.56
29	SUNGAI BATU	113.70	130.00
30	BUKIT TAMPOI	31.50	32.64
31	SUNGAI SELANGOR SSP1	950.00	800.00
32	SUNGAI SELANGOR SSP3	800.00	700.00
33	SG. RASA	250.00	150.00
34	SG LABU	105.00	70.00
TOTAL		4,606	4,436.00

Nota

- WTP operating exceeding design capacity or overloading
- WTP operating below design capacity due to constraint in distribution mains

Pollution Issues – Existing Limitations

- Development and upgrading work to treat low quality and polluted water cannot be made overnight, take time and require investment
- Inadequate tariff structure to fund utility operations and maintenance
- Challenges of an integrated approaches to water resources management

Scope of Presentation

- Introduction
- Water for People and Industry
- Pollution Issues
- **Strategies to Move Forward**
- Conclusion

Strategies to Move Forward

- Avoid Pollution
 - Protection of water resource
 - [Water Safety Plan](#) & IWRM
- Expedite industry restructuring so that water operators will be financially assisted
 - Investment for early warning system to detect pollution, installation of advanced technology for water treatment and increase water operators' competency to deal with sudden pollution.

Strategies to Move Forward

- Risk Mitigation
 - Inter-catchment transfer eg Pahang-Selangor Raw Water Transfer Project and Langat 2

	Catchment	Nos of WTP	Abstraction (MLD)	Critical Factors
1.	Sg. Selangor	5 nos.	2,685 MLD	- Supply 61% of water demand of Selangor, KL and Putrajaya
2.	Sg. Semenyih	1 no.	665 MLD	- Supply 15% of water demand of Selangor, KL and Putrajaya
3.	Sg. Langat	5 nos.	535 MLD	- Supply 12% of water demand of Selangor, KL and Putrajaya
	Sg. Semantan, Pahang	1 no.	1,890 MLD	- To supply Selangor, KL and Putrajaya

Strategies to Move Forward

- Strengthen enforcement for protection of water resources
 - Joint enforcement among regulators
 - It is an offence under Section 121 of WSIA 2006 if a person contaminate any water course

Strategies to Move Forward

- Contribution of the “Water Industry Fund” for water resource protection
 - Section 171 of WSIA 2006 - “The water industry fund shall be expended for the following purposes:
 - (a) protection and preservation of the watercourses and water catchment area;
 - (b) to ensure sustainability of water supply from the water courses;
 - (c) the improvement of water quality at the watercourses
 - (d)
 - (e)

Scope of Presentation

- Introduction
- Water for People and Industry
- Pollution Issues
- Strategies to Move Forward
- Conclusion

Conclusion

- The water services industry in Malaysia is undergoing major reforms
- Effective and efficient water supply services depends on good water resource management
- Quantity and quality of water source are vital for continuous supply of safe and clean water
- Water supply operations require continuous support from various agencies.
- Cooperation of all stakeholders are required

If we want our children to have the best in life... if we want future generations to have enough water... let's start by not wasting the water we have today. Because every drop used, is a drop less for tomorrow.

Every drop used is a drop taken from our children

THANK YOU



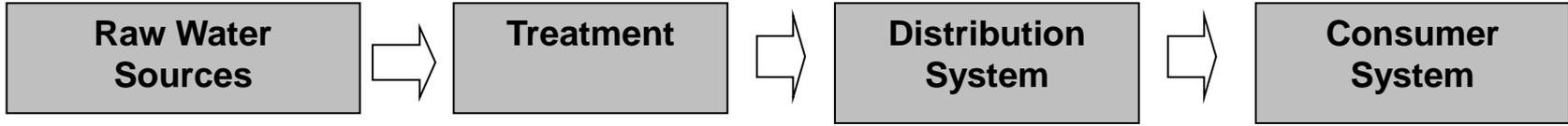
USE
WATER
WISELY

SPAN
Suruhanjaya Perkhidmatan Air Negara
Your Water, Our Priority.

Water Safety Plan for Safe Drinking water

- WSP – a documented plan that identifies credible risks from catchment to consumer, prioritizes those risks and puts in place controls to mitigate them
 - Requires processes to verify the effectiveness of the management control systems put in place and the quality of the water produced.
- An approach recommended by WHO for ensuring safe drinking water to the public.
- Adopted by Ministry of Health to regulate the drinking water quality in Malaysia.
- Safe Drinking Water Act is to be introduced in the very near future.
- Water operators adopt the approach for the sustainability of their operations and to meet regulations requirements

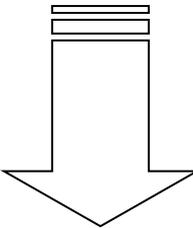
Water Safety Plans Diagram



Roles and Responsibility



Knowledge Sharing



THE GOAL
Good, Safe Drinking Water that has the Trust of Consumer



Water Safety Plan – 3 Elements for Raw Water Sources

1. Development and implement of catchment management plan, which includes control measures to protect surface and ground water sources.
2. Ensuring that planning regulations include protection of water resources (land use planning and watershed management) from potentially polluting activities are enforced.
3. Promoting awareness in the community of the impact of human activities on water quality.

Water Safety Plans vs. IWRM

- Water Safety Plans for raw water sources can be achieved through effective implementation of Integrated Water Resource Management (IWRM)
- WSP and IWRM complement each others

[Back](#)