

**NATIONAL ENVIRONMENTAL HEALTH ACTION PLAN
(NEHAP) CONFERENCE 2016
29TH SEPTEMBER, PICC PUTRAJAYA**

WATER & SEWERAGE

National Water Services Commission(SPAN), Malaysia

SNAP SHOT OF INDUSTRY



POLICIES



**Reserve
Margin
20%**

**NRW
Reduction of
25% in 2020**



**Water
Demand
Management**

- *New Sources*
- *Water Saving Devices*
- *Recycling*
- *Enforcement*

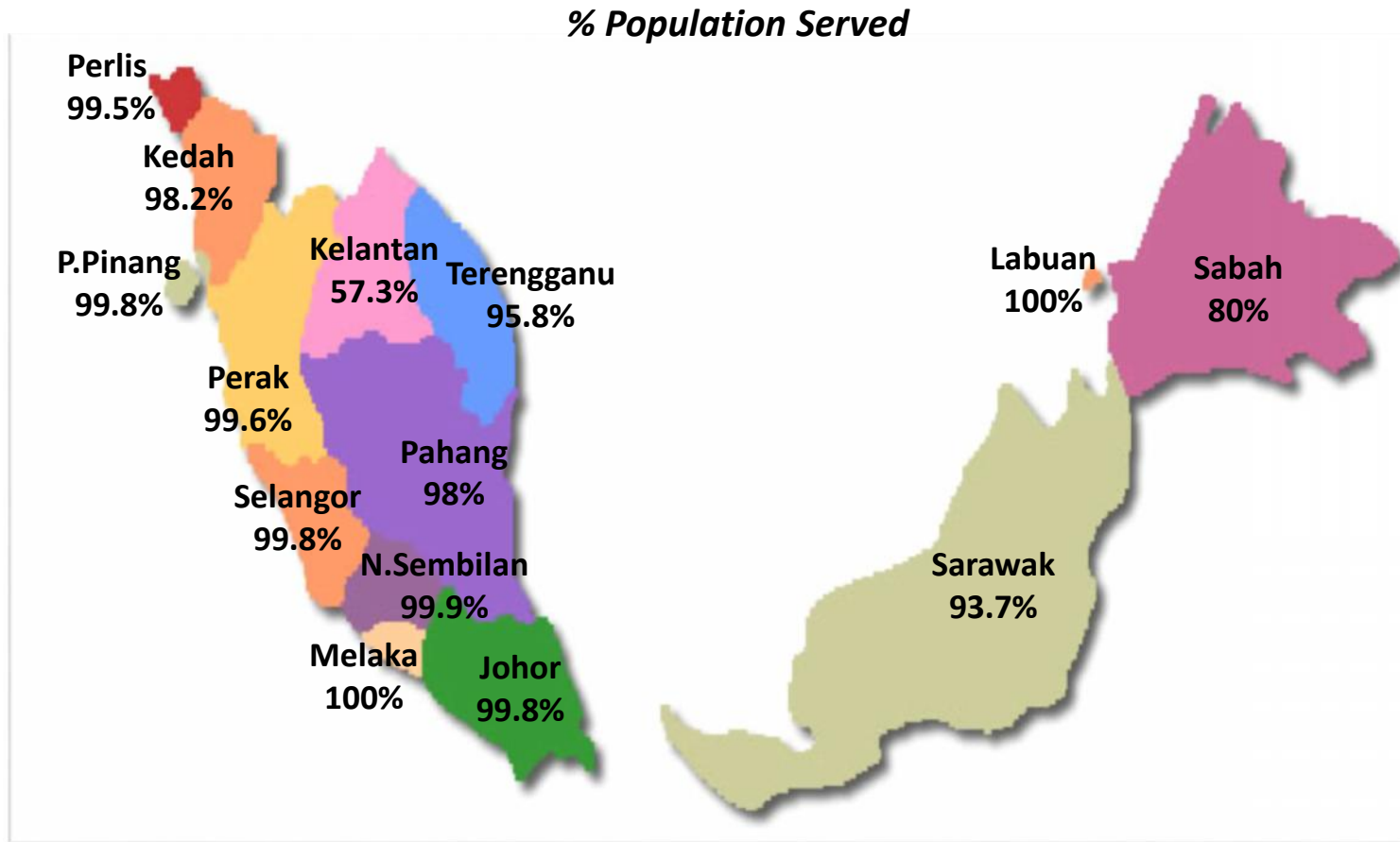
**Sewerage
Systems for
more than 30
units of house
(150PE)**



**Green
Lifestyle –
Promotion
and
awareness**



Quick Facts On The Water Services In Malaysia

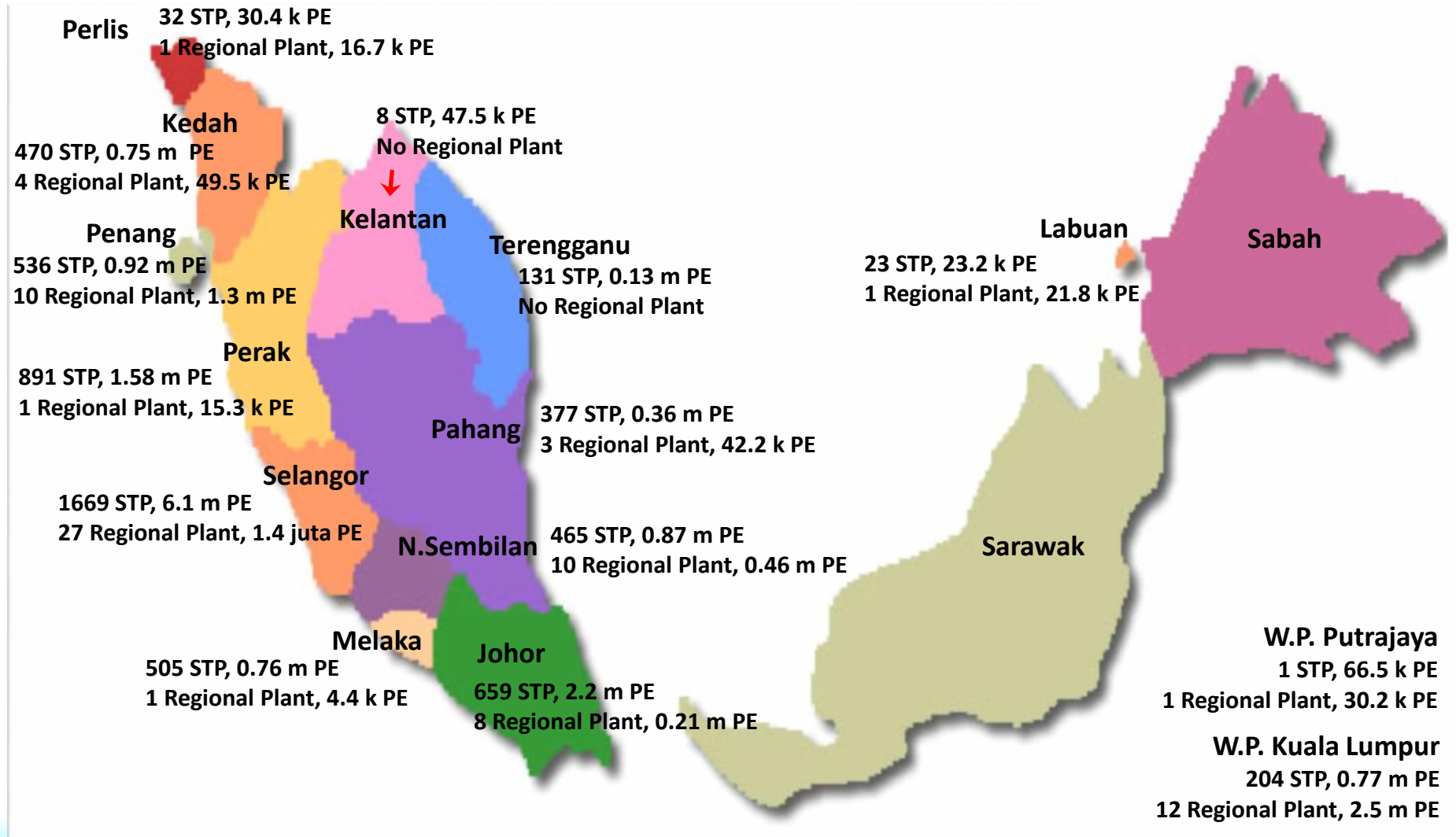


State	Water Operator
Johor	SAJH SWC
Melaka	SAMB
N.Sembilan	SAINS
Selangor	SYABAS PNSB SPLASH ABASS
Perak	LAP MUC AUSB
Pulau Pinang	PBAPP
Kedah	SADA Taliworks AUI
Perlis	JKR Perlis
Pahang	PAIP
Terengganu	SATU
Kelantan	AKSB
Sabah	JBA Sabah
Sarawak	JKR Sarawak LAKU Sibu Kuching
Labuan	JBA Labuan

✓ Sewerage sector is managed by IWK except for Kelantan (Majaari), Johor Bahru and Pasir Gudang located in Johor (Local Authorities)

QUICK FACTS : SEWERAGE SERVICES

POPULATION EQUIVALENT (PE) COVERAGE



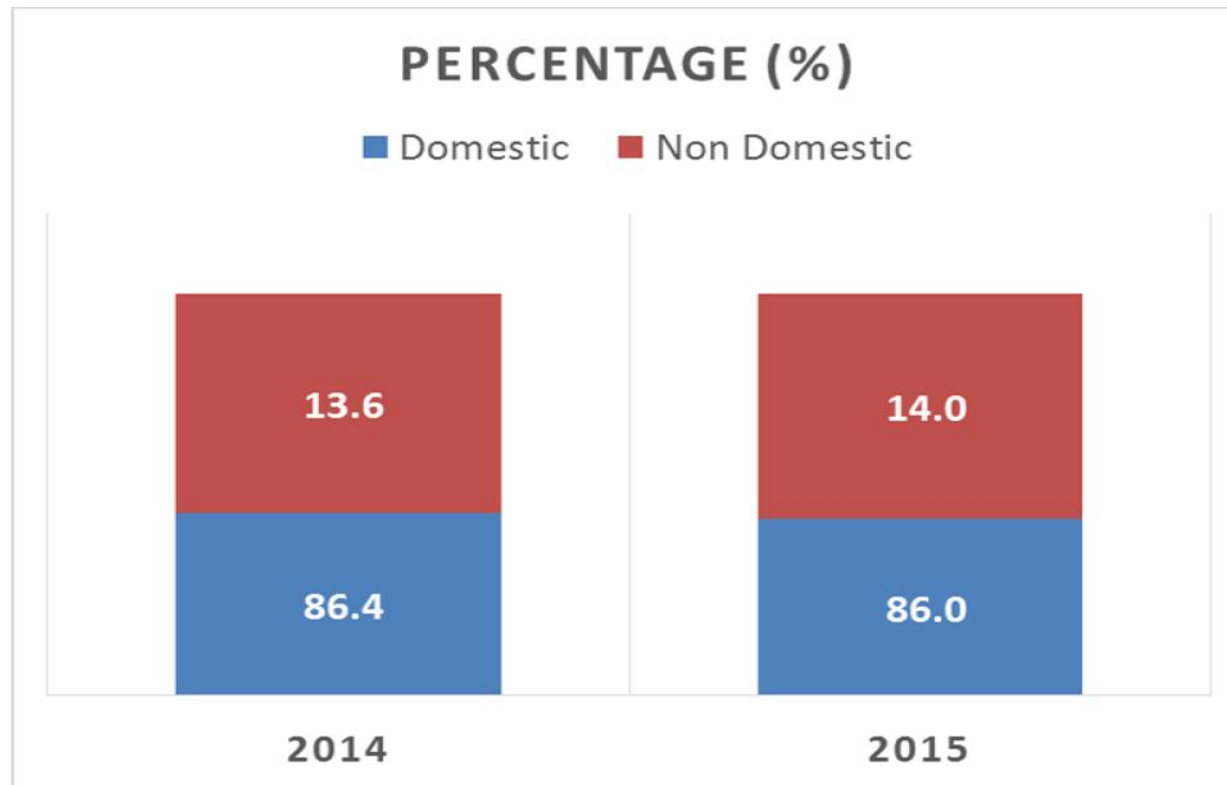
Note: Operation & Maintenance by IWK except Kelantan (Majaari), Johor Bahru dan Pasir Gudang, Johor (Local Authority)

WATER SUPPLY STATISTICS

Water Treatment Plants Design Capacity and Production 2014 – 2015

State	2014				2015			
	No. of WTPS	WTPs Design Capacity	Production	Reserve Margin	No. of WTPS	WTPs Design Capacity	Production	Reserve Margin
		(MLD)	(MLD)	(%)		(MLD)	(%)	
Johor	44	1,986	1,568	21.1	44	1,986	1,619	18.5
Kedah	36	1,300	1,299	0.1	36	1,308	1,315	0
Kelantan	35	500	445	10.9	35	500	454	9.2
Labuan	6	101	69	31.5	6	101	73	27.6
Melaka	9	631	532	15.6	9	639	519	18.8
N. Sembilan	23	931	744	20.1	23	994	752	24.4
Pulau Pinang	9	1,497	995	33.5	9	1,479	1,014	31.4
Pahang	81	1,447	1,108	23.4	76	1,414	1,129	20.1
Perak	46	1,816	1,224	32.6	46	1,816	1,289	29.0
Perlis	4	233	208	10.6	4	233	220	5.6
Sabah	73	1,304	1,196	8.3	73	1,304	1,229	5.8
Sarawak	93	1,532	1,188	22.4	93	1,609	1,268	21.1
Selangor	34	4,606	4,594	0.3	34	4,606	4,675	0
Terengganu	12	846	598	29.4	12	846	603	28.7
MALAYSIA	505	18,730	15,768	15.8	500	18,835	16,159	14.2

Proportion of Domestic and Non-Domestic Connection 2014 – 2015



Domestic Consumption Per Capita Per Day 2014 – 2015

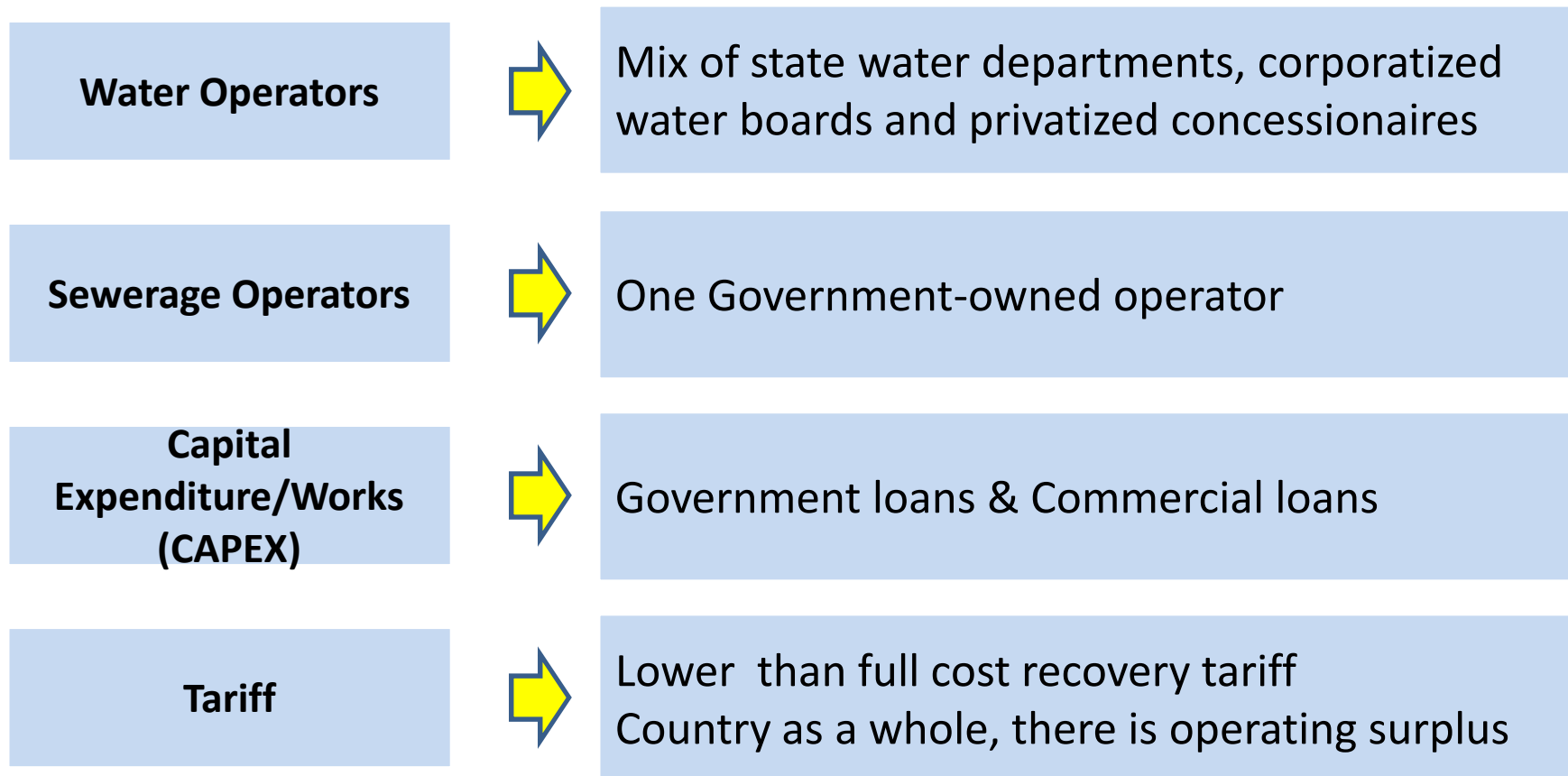
State	Consumption Per Capita Per Day	
	l/cap/d	
	2014	2015
Johor	220	211
Kedah	229	223
Kelantan	147	146
Labuan	170	168
Melaka	234	235
N. Sembilan	223	226
Pulau Pinang	293	291
Pahang	187	187
Perak	239	236
Perlis	258	249
Sabah	114	109
Sarawak	173	172
Selangor	231	234
Terengganu	216	214
MALAYSIA	211	209

Non-Revenue Water (NRW) 2014 – 2015

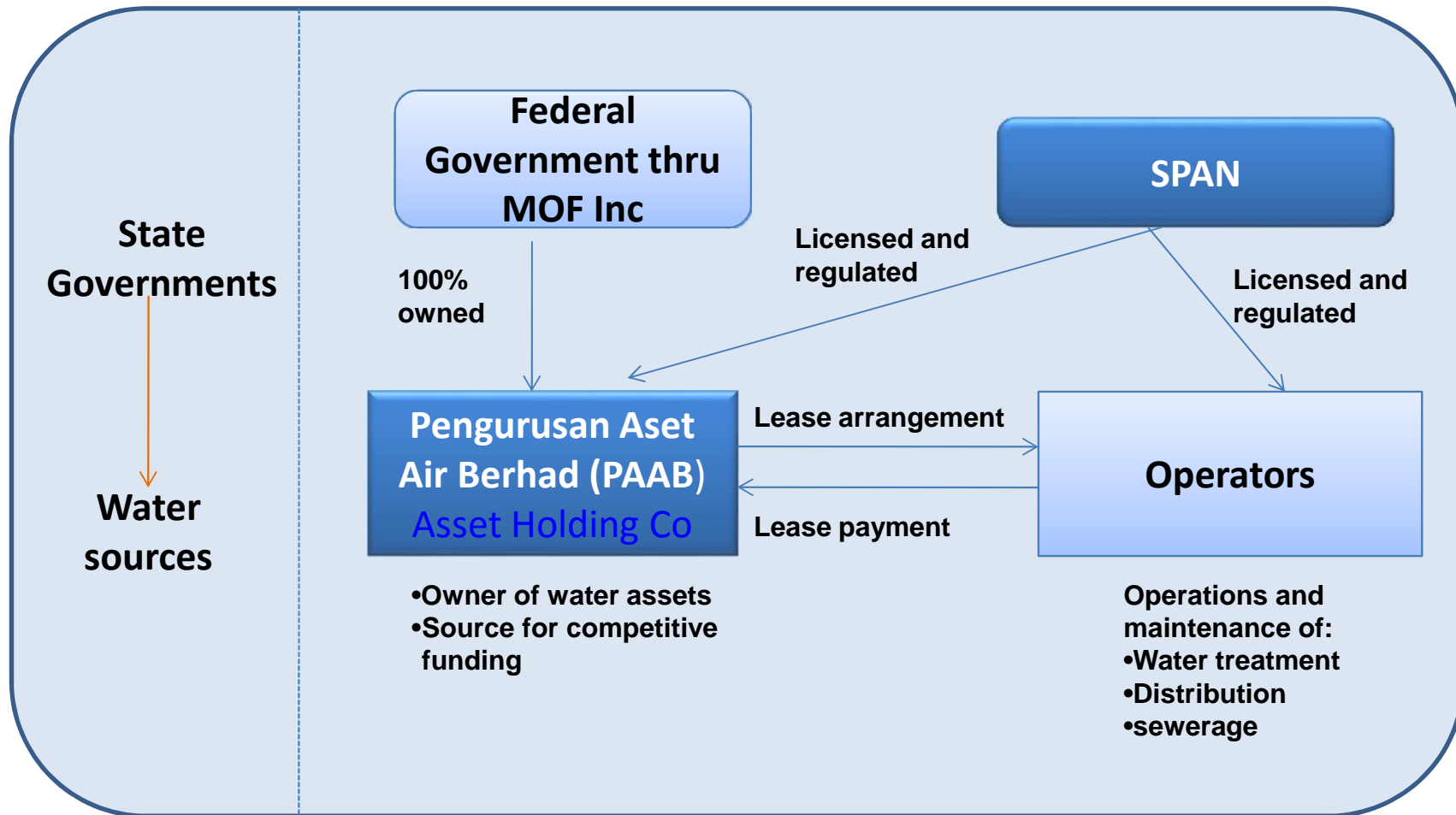
State	2014				2015			
	System Input Volume	Billed Authorised Consumption	NRW	NRW (%)	System Input Volume	Billed Authorised Consumption	NRW	NRW (%)
	(MLD)				(MLD)			
Johor	1,640	1,215	426	25.9	1,702	1,266	436	25.6
Kedah	1,294	697	596	46.1	1,316	702	614	46.7
Kelantan	445	225	220	49.4	454	231	222	49.0
Labuan	69	48	20	29.5	71	49	22	30.9
Melaka	478	376	102	21.4	481	388	93	19.3
N. Sembilan	744	476	267	35.9	757	493	264	34.8
Pulau Pinang	995	813	182	18.3	1,014	813	202	19.9
Pahang	1,108	520	588	53.1	1,128	532	596	52.8
Perak	1,237	858	379	30.6	1,260	878	382	30.3
Perlis	216	95	121	55.8	220	96	124	56.3
Sabah	1,196	577	618	51.7	1,229	552	677	55.1
Sarawak	1,192	810	381	32.0	1,268	846	423	33.3
Selangor	4,593	3,048	1,545	33.6	4,675	3,178	1,497	32.0
Terengganu	605	417	188	31.0	621	428	192	31.0
MALAYSIA	15,809	10,176	5,633	35.6	16,195	10,452	5,743	35.5

Industry Landscape Before Reform

Pre-restructuring



NEW WATER INDUSTRY MODEL

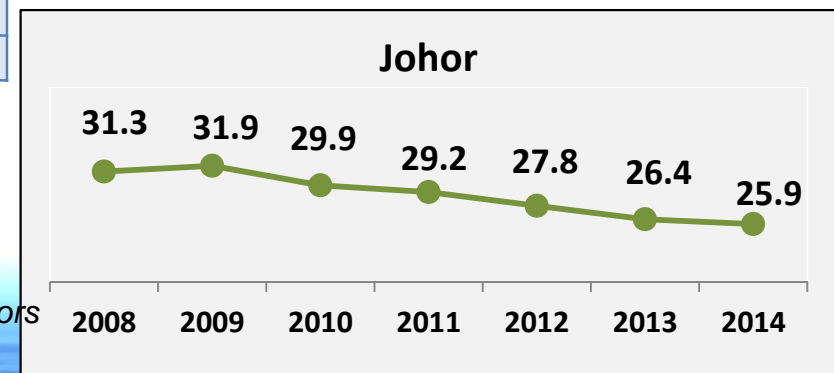
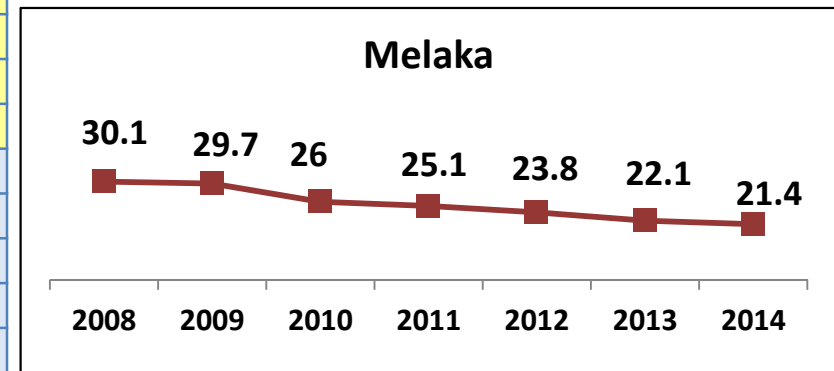
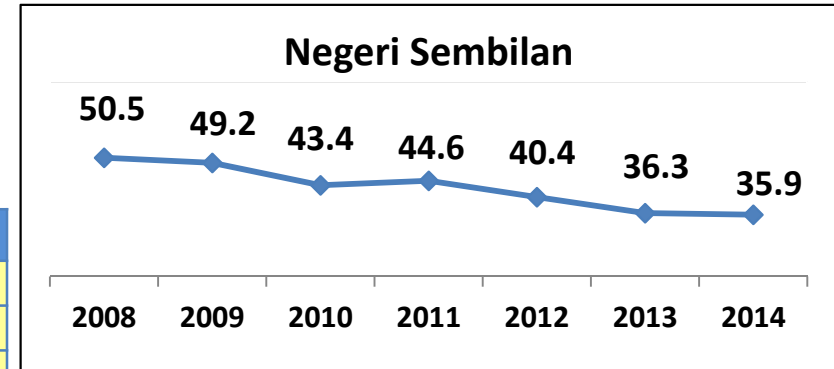


.....lower NRW for Asset-light states

NRW Achievement (%) (2008 – 2014)

	STATE	2008	2009	2010	2011	2012	2013	2014
1	Johor	31.3	31.9	29.9	29.2	27.8	26.4	25.9
2	Melaka	30.1	29.7	26	25.1	23.8	22.1	21.4
3	N. Sembilan	50.5	49.2	43.4	44.6	40.4	36.3	35.9
4	P. Pinang	16.9	19.1	18.2	18.4	17.6	18.2	18.3
5	Perak	31.4	30.7	29.4	30.4	30.1	30.4	30.6
6	Perlis	41.7	44.7	51.3	59.8	66.4	62.4	55.8
7	Kedah	45	44.9	44.9	47.8	50.6	50.9	46.1
8	Kelantan	49.4	48.3	52.4	55.6	53.9	53.1	49.4
9	Labuan	33.2	25.8	24.9	21.9	20.4	25.9	29.5
10	Pahang	52.9	59.9	55.3	56.2	54.2	52.7	53.1
11	Selangor	33.9	32.5	32.4	32.3	33.1	34.5	33.6
12	Terengganu	38	37.9	39.4	37	36.8	33.8	31.0
	Average	36.2	36.6	35.4	36.1	35.9	36.6	35.6

Source : Malaysia Water Industry Guide 2015

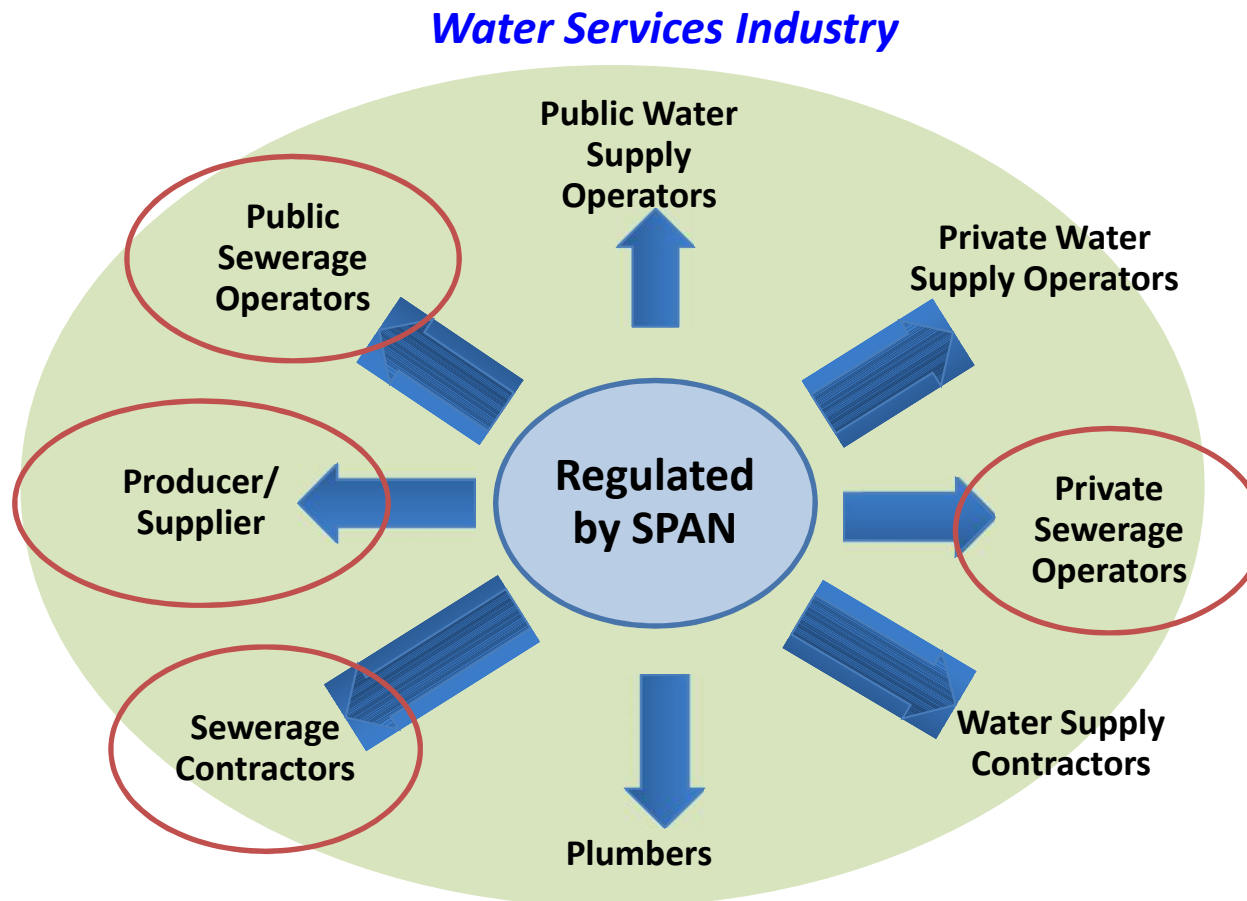


Achievement of the Asset-light Operators

Regulation By SPAN

Role of regulator

- A technical and economic regulatory body for water services
- Regulates all entities in the water services and sewerage industry



RESTRUCTURING PROGRESS



PUBLIC & PRIVATE OPERATORS



(Public : 25 nos)



(Private : 825 nos)

PLUMBERS

(13,186 nos)

REGULATED BY SPAN

CONTRACTORS

(21,894 nos)



SYSTEM/PRODUCT SUPPLIERS

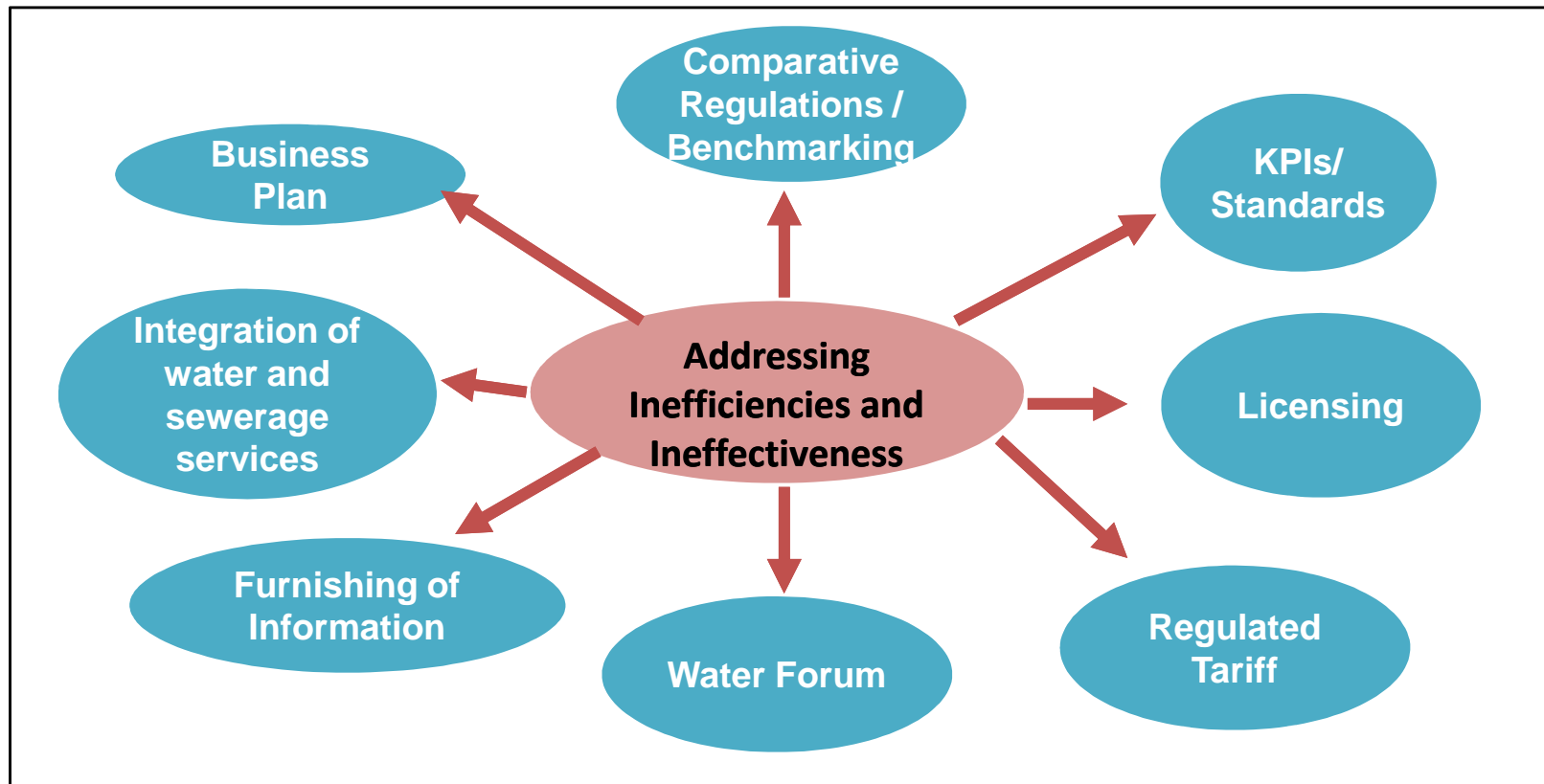
(Sewerage : 184 nos)

(Water : 287 nos)

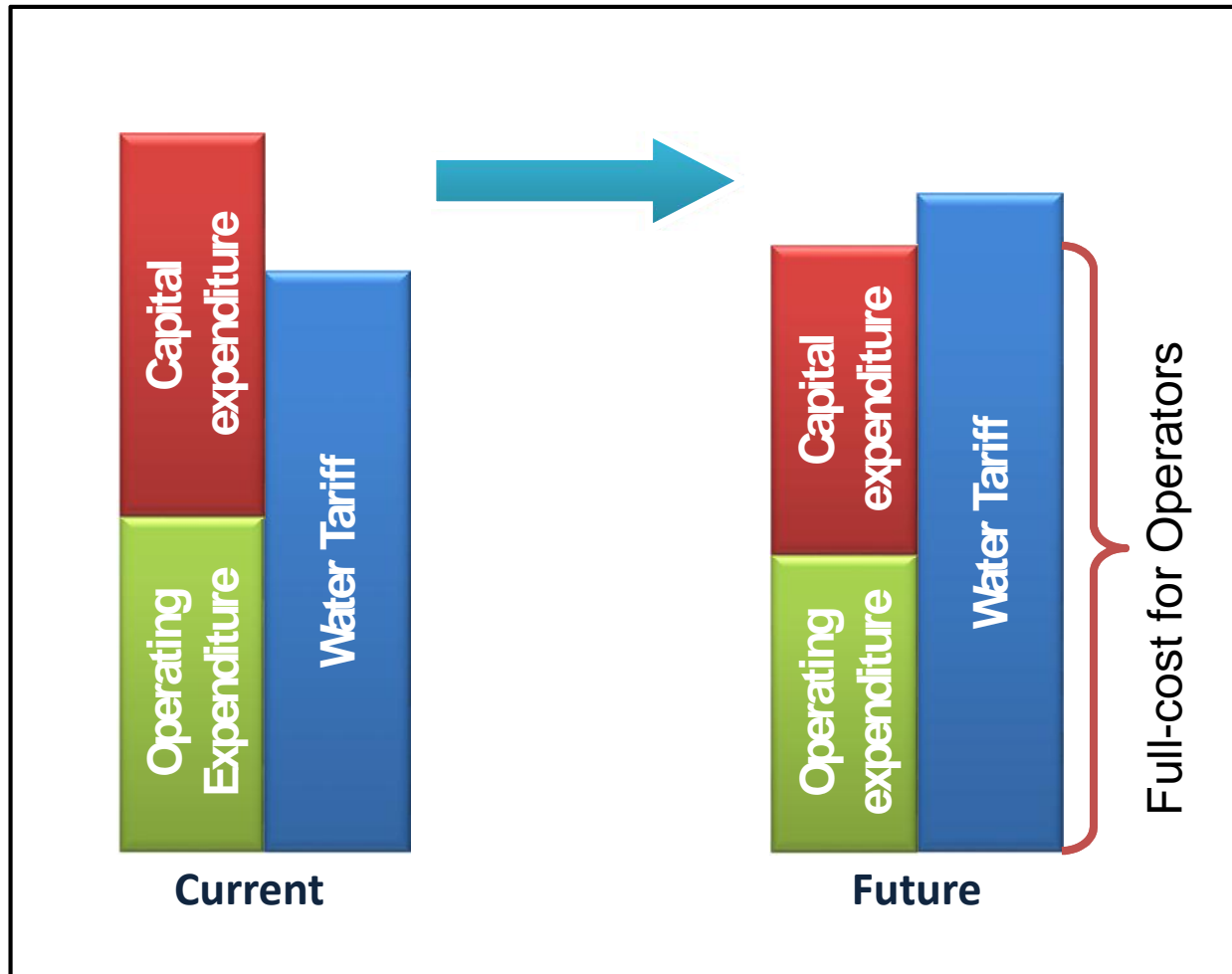


Shaping Efficiency And Effectiveness

Regulatory instruments/provisions to drive efficiency and effectiveness.



Full-cost Recovery Model

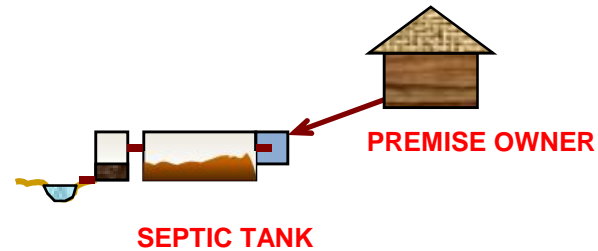


Private Sector Driven Infrastructure Development

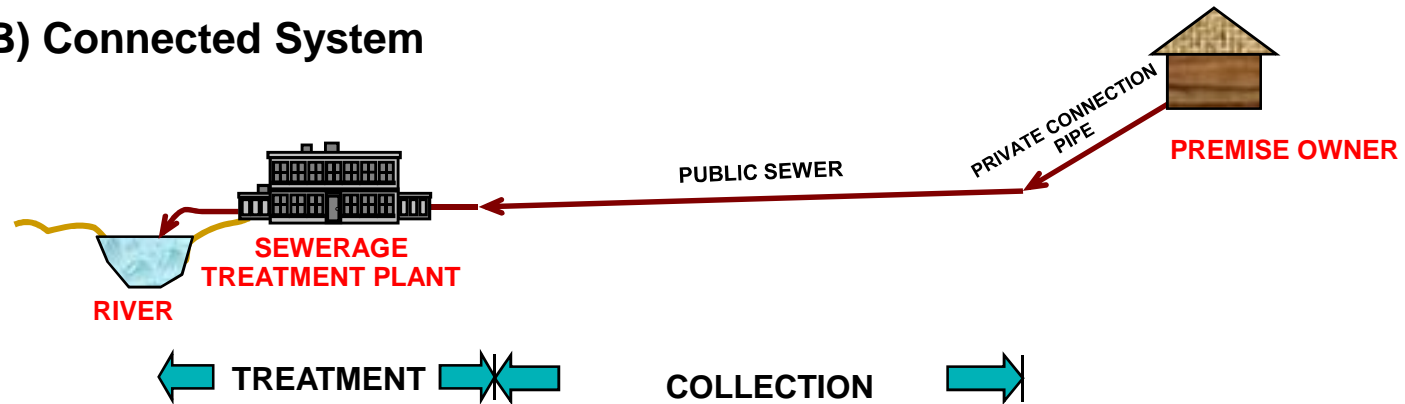
- Since 1970's implementation of the 5 yearly national development programs the private sector has been the prominent developer of sewerage systems in Malaysia.
- Private sector maintained sewerage systems for 5 years before handed over to Local Authorities.
- CAPEX and OPEX of systems were inbuilt in the selling price of properties.
- The large scale central sewerage systems were only implemented by Government in selected big cities of >100,000 population
- Government has managed to delay the provision of large scale central sewerage system.
- In this respect that policy review as well strategies being introduced towards realising efficient sewerage infrastructures at affordable costs and meeting development goals.

SEWERAGE SYSTEM

A) Individual Septic Tank



B) Connected System



Sewerage services are under the jurisdiction of Federal Government

SEWERAGE STATISTICS

Sewerage Facilities 2014 – 2015

Sewerage Facilities	2014		2015	
	Quantity	Population Equivalent (PE)	Quantity	Population Equivalent (PE)
Public Sewage Treatment Plant (a+b)	6,374	22,517,132	6,571	23,517,185
a. Multipoint Plant	6,288	15,724,638	6,481	16,296,052
b. Regional Plant	86	6,792,494	90	7,221,133
Private Sewage Treatment Plant	2,972	2,813,248	3,158	2,795,877
Communal Septic Tank	4,377	529,780	4,386	532,051
Individual Septic Tank	1,324,083	6,739,192	1,321,856	6,747,774
Traditional System	894,859	4,474,293	894,859	4,474,293
Network Pumping Station	1,027	n.a.	1,078	n.a.
Length of Sewer Network (km)	18,076	n.a.	18,689	n.a.

SEWERAGE STATISTICS

Sewerage Facilities by States - Public Sewage Treatment Plant

State	Multi Point STP ^{1(a)}				Regional Plant ^{1(b)}				TOTAL			
	2014		2015		2014		2015		2014		2015	
	NO.	PE	NO.	PE	NO.	PE	NO.	PE	NO.	PE	NO.	PE
Johor	697	2,432,796	721	2,476,920	11	306,107	14	391,731	708	2,738,903	735	2,868,651
Kedah	524	852,482	550	888,921	4	58,549	4	62,875	528	911,031	554	951,796
Kelantan	8	47,500	8	47,500	0	0	0	0	8	47,500	8	47,500
Melaka	539	837,046	567	881,929	1	5,952	1	5,982	540	842,998	568	887,911
N. Sembilan	456	871,529	441	877,677	11	630,118	11	653,750	467	1,501,647	452	1,531,427
P. Pinang	561	1,038,196	568	1,071,217	10	1,341,912	10	1,476,326	571	2,380,108	578	2,547,543
Pahang	420	391,300	452	422,951	4	70,515	4	72,569	424	461,815	456	495,520
Perak	955	1,687,878	994	1,740,514	3	43,950	3	46,820	958	1,731,828	997	1,787,334
Perlis	37	38,459	41	41,412	1	16,728	1	17,171	38	55,187	42	58,583
Selangor	1,740	6,493,543	1,783	6,850,017	29	1,853,568	29	1,870,712	1,769	8,347,111	1,812	8,720,729
Terengganu	142	156,738	151	169,375	0	0	0	0	142	156,738	151	169,375
F.T. Kuala Lumpur	185	783,996	182	804,494	10	2,407,740	10	2,487,963	195	3,191,736	192	3,292,457
F.T. Labuan	23	23,125	23	23,125	1	24,651	1	24,707	24	47,776	24	47,832
F.T. Putrajaya	1	70,050	0	0	1	32,704	2	110,527	2	102,754	2	110,527
TOTAL	6,288	15,724,638	6,481	16,296,052	86	6,792,494	90	7,221,133	6,374	22,517,132	6,571	23,517,185

Note:

1. Public Sewerage treatment plant:

a. Multi point STP: STPs to cater for sporadic and scattered development by different developers

b. Regional plant: STPs identified in the Sewerage Catchment Study to cater for a sewerage catchment area

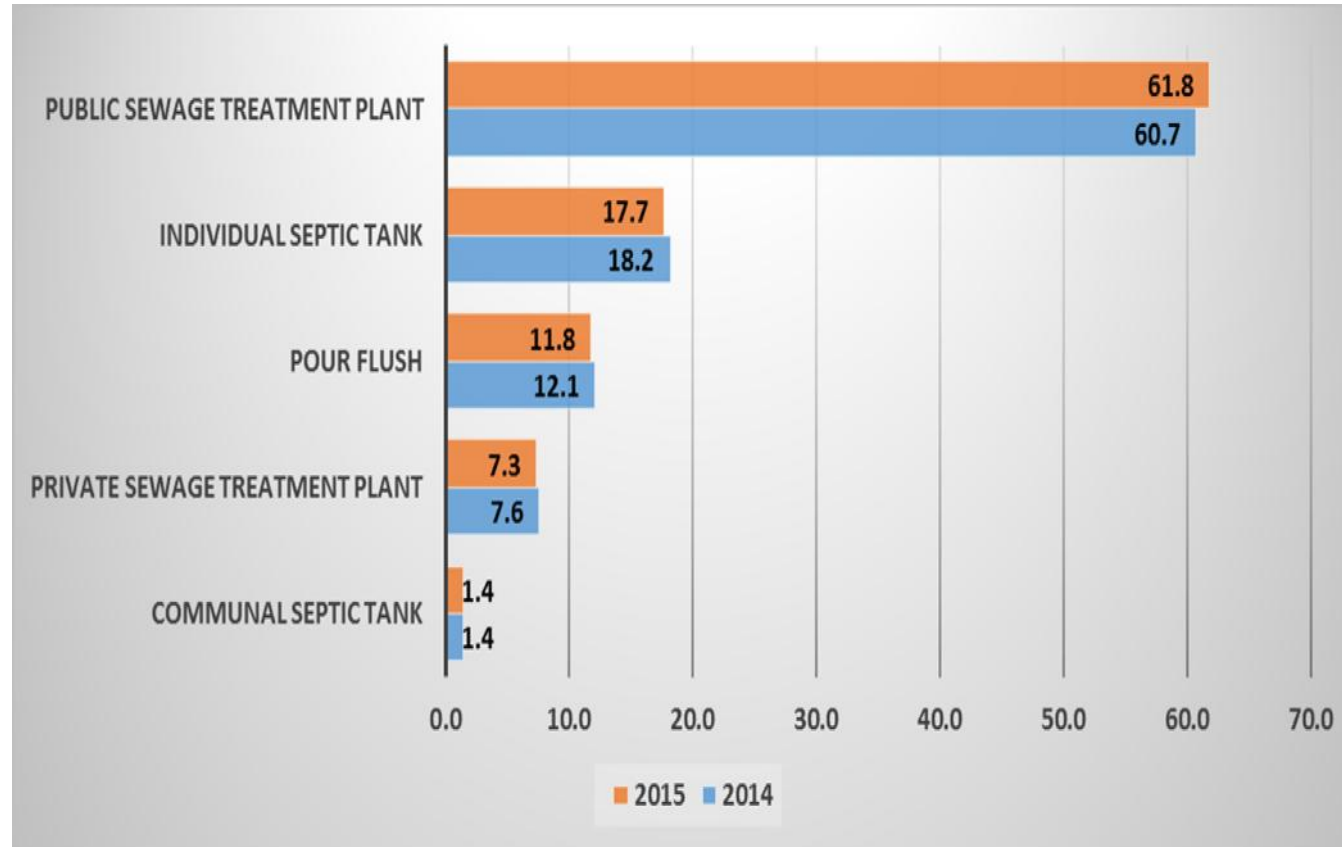
SEWERAGE STATISTICS

Sewerage Facilities by States - Septic Tank

STATE	Communal Septic Tank				Individual Septic Tank			
	2014		2015		2014		2015	
	NO.	PE	NO.	PE	NO.	PE	NO.	PE
Johor	528	46,290	528	46,290	268,850	1,330,340	268,722	1,329,700
Kedah	410	43,782	410	43,782	157,365	786,825	157,130	785,650
Kelantan	738	117,728	738	117,728	45,096	344,307	45,096	377,884
Melaka	309	31,440	309	31,440	58,171	290,855	57,834	289,170
N. Sembilan	440	38,350	452	41,705	77,343	386,715	76,138	380,690
P. Pinang	83	15,646	83	16,011	13,389	66,945	8,579	42,895
Pahang	175	13,840	177	14,600	138,292	691,460	137,569	687,845
Perak	581	100,388	581	100,519	216,624	1,083,120	216,315	1,081,575
Perlis	16	2,665	16	2,665	19,719	98,595	19,571	97,855
Selangor	929	89,788	929	89,788	180,779	903,895	182,946	914,730
Terengganu	145	15,963	145	15,963	89,500	461,360	92,213	461,065
F.T. Kuala Lumpur	18	13,110	13	10,770	52,372	261,860	51,731	258,655
F.T. Labuan	5	790	5	790	6,581	32,905	8,010	40,050
F.T. Putrajaya	0	0	0	0	2	10	2	10
TOTAL	4,377	529,780	4,386	532,051	1,324,083	6,739,192	1,321,856	6,747,774

SEWERAGE STATISTICS

Proportion of Population Equivalent (PE) by Sewerage System 2014 – 2015



SEWERAGE STATISTICS

Sewerage Facilities by States - Private Sewage Treatment Plant

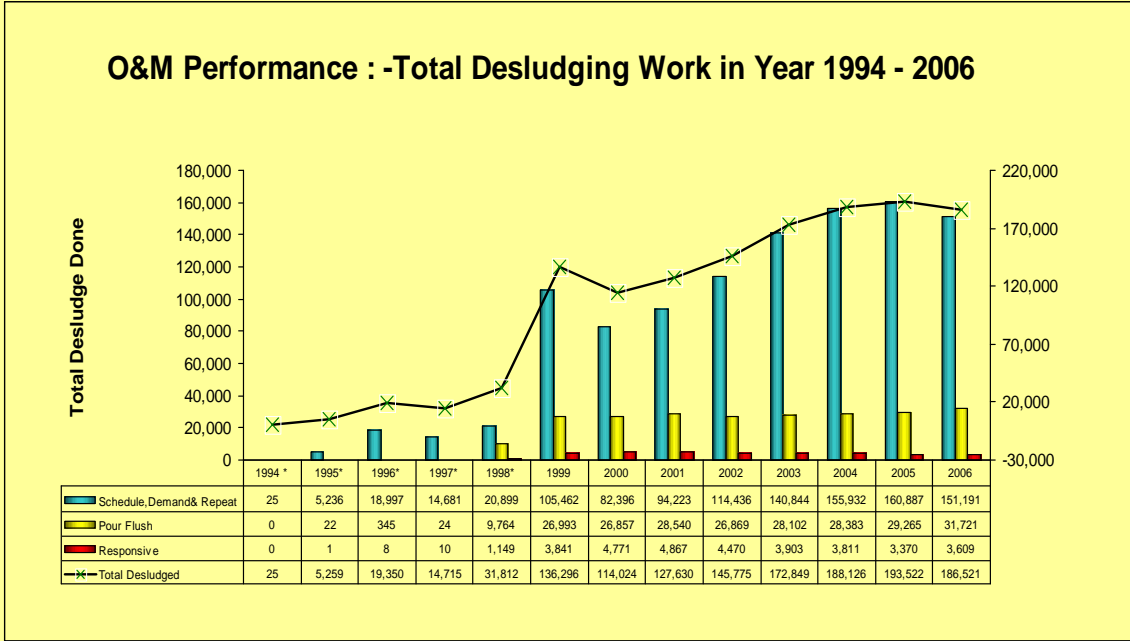
State	Private STP			
	2014		2015	
	NO.	PE	NO.	PE
Johor	244	604,096	234	405,546
Kedah	244	175,076	260	184,838
Kelantan	131	134,644	131	134,644
Melaka	366	239,408	385	251,638
N. Sembilan	181	150,925	192	154,800
P. Pinang	107	91,260	136	115,055
Pahang	452	510,546	469	521,975
Perak	329	178,743	369	196,117
Perlis	56	31,861	62	33,174
Selangor	467	404,965	520	502,601
Terengganu	242	164,332	242	164,332
F.T. Kuala Lumpur	105	84,300	110	88,065
F.T. Labuan	46	42,558	46	42,558
F.T. Putrajaya	2	534	2	534
TOTAL	2,972	2,813,248	3,158	2,795,877

IMPROVEMENT – CAPITAL WORKS PROGRAMME

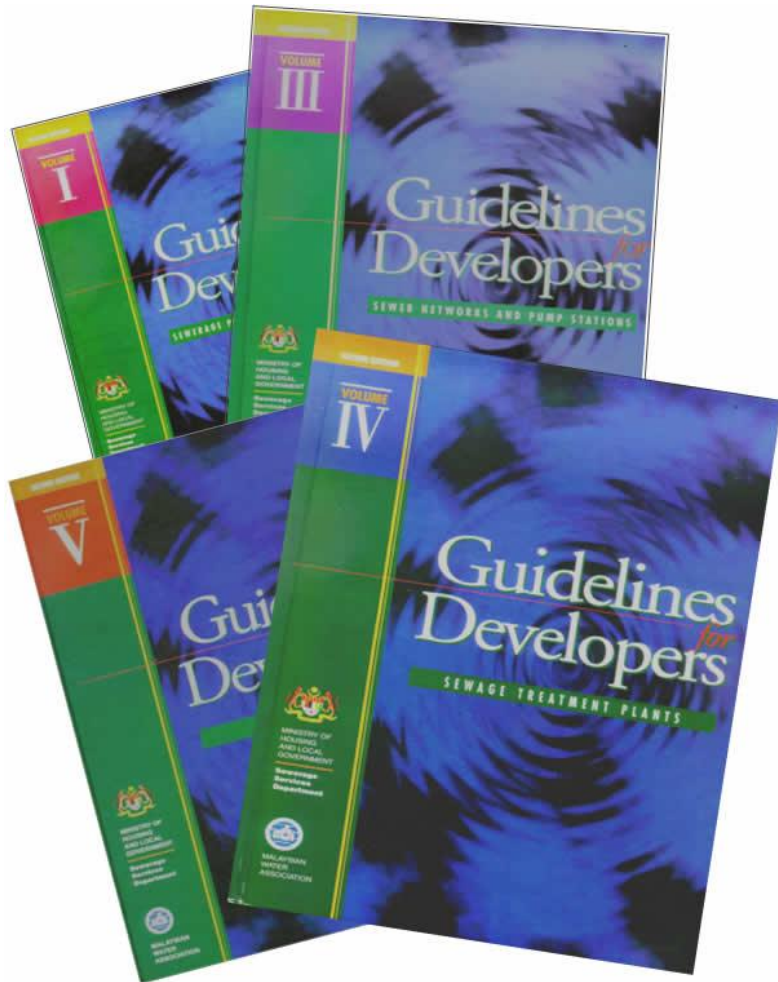
- Refurbishment and upgrading of existing public treatment plants and sewers to ensure acceptable performance
- Capital Works are integrated through the formulation of Sewerage Catchment Strategies
- Program established to rationalise treatment plants for greater efficiencies



IMPROVEMENT -DESLUDGING SERVICES



IMPROVEMENT – NATIONAL GUIDELINES



- **Nationwide standardisation of sewerage infrastructure requirements**
- **Developer Guidelines ensures new plants are built to comply with DOE Std.**
- **Systematic submission of the sewage treatment plants design to ensure compliance to Health & Safety and Operational requirements**

Septage Management -Individual Septic Tank (IST)

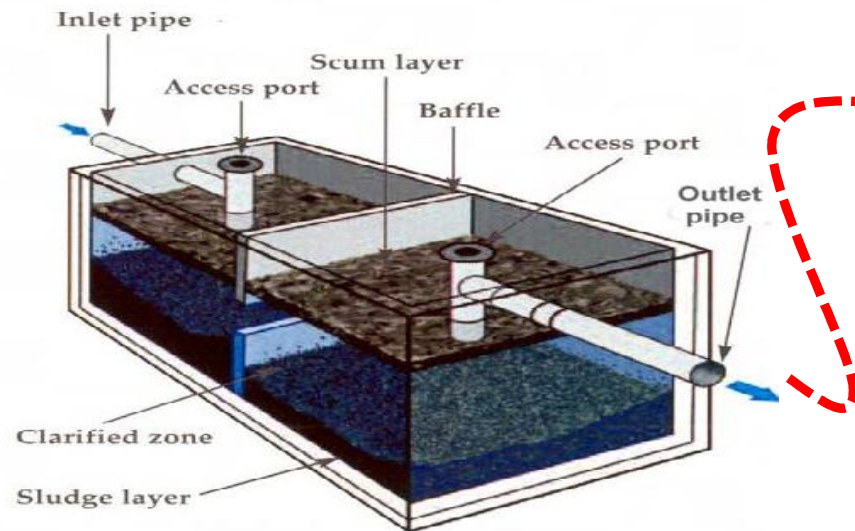
Individual Septic Tanks(IST)



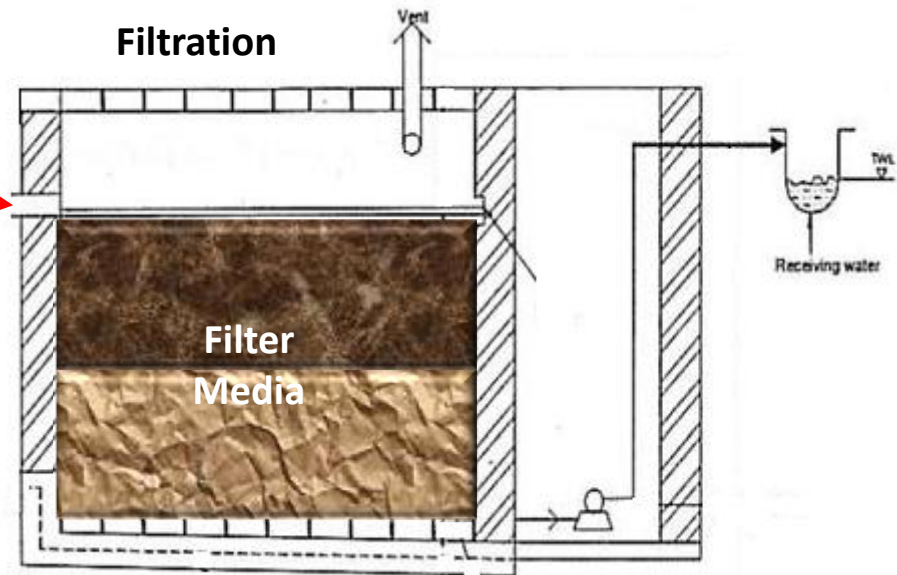
Communal Septic Tanks(CST)



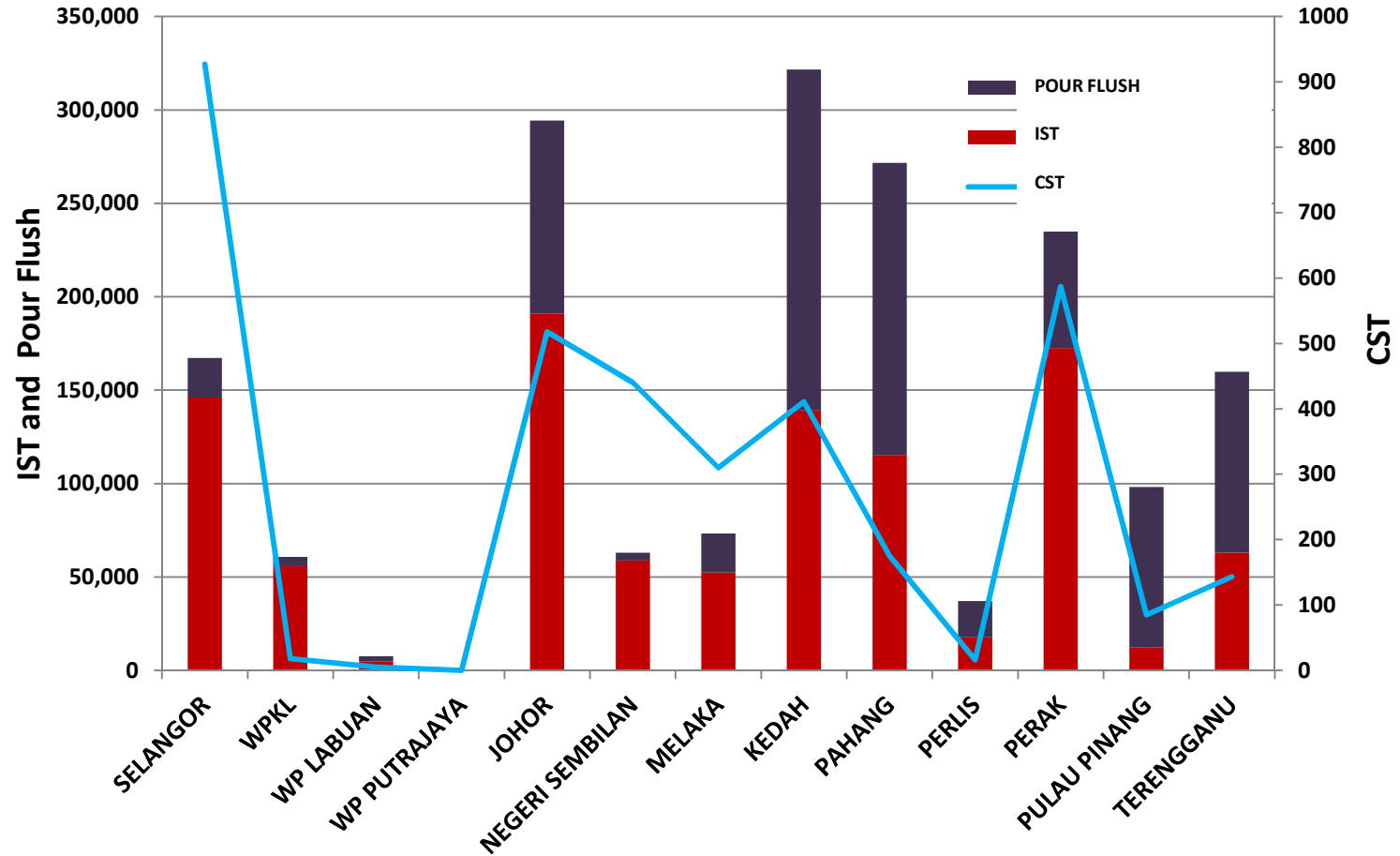
Sedimentation



Filtration



Number of Individual Septic Tanks(IST) and Communal Septic Tanks(CST)



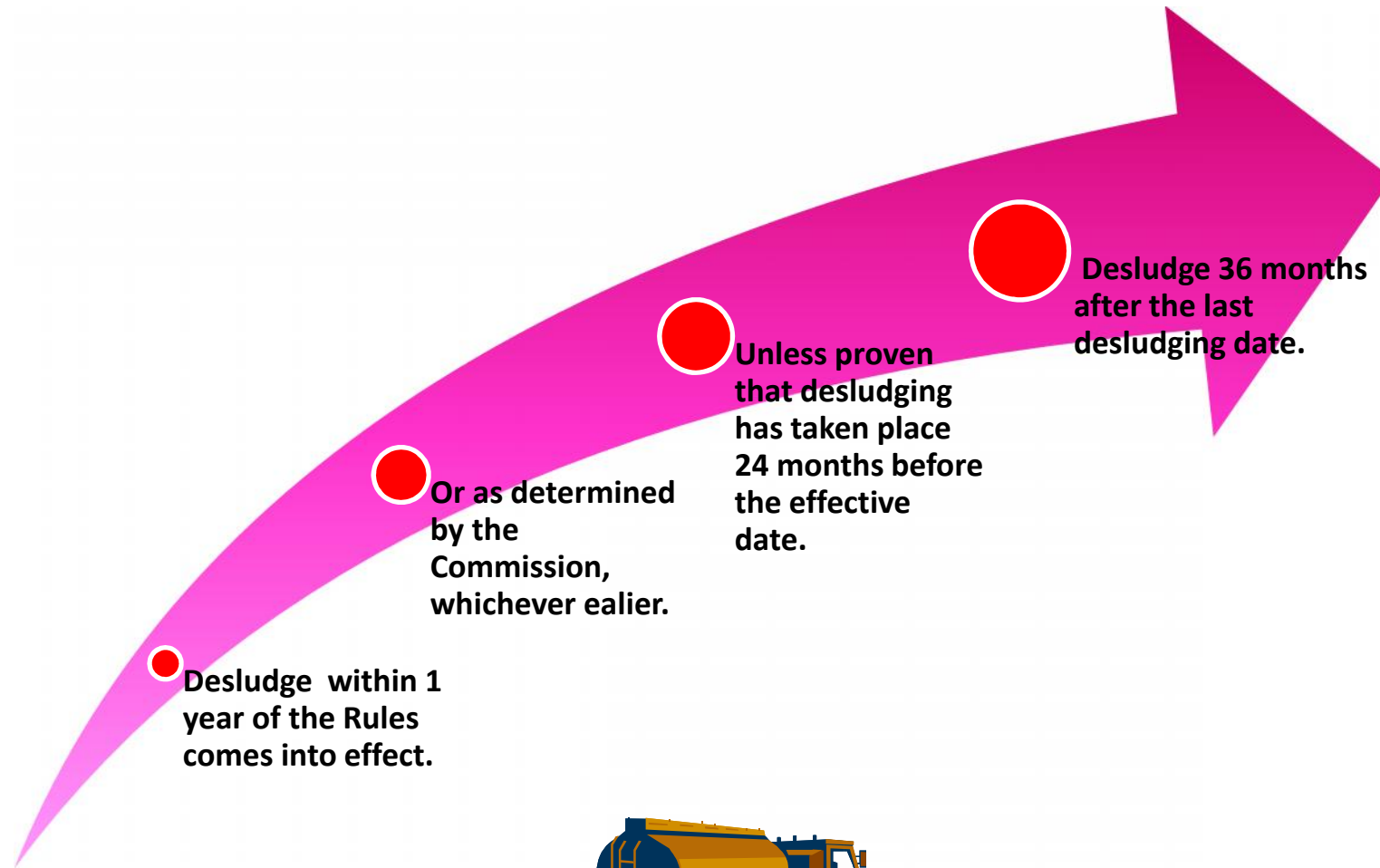
Number of systems (2014):

- Total IST \approx 1.2 million
- Total CST \approx 3,300
- Total Pour Flush \approx 300,000
- Total of 2000 new ISTs per year since 2008

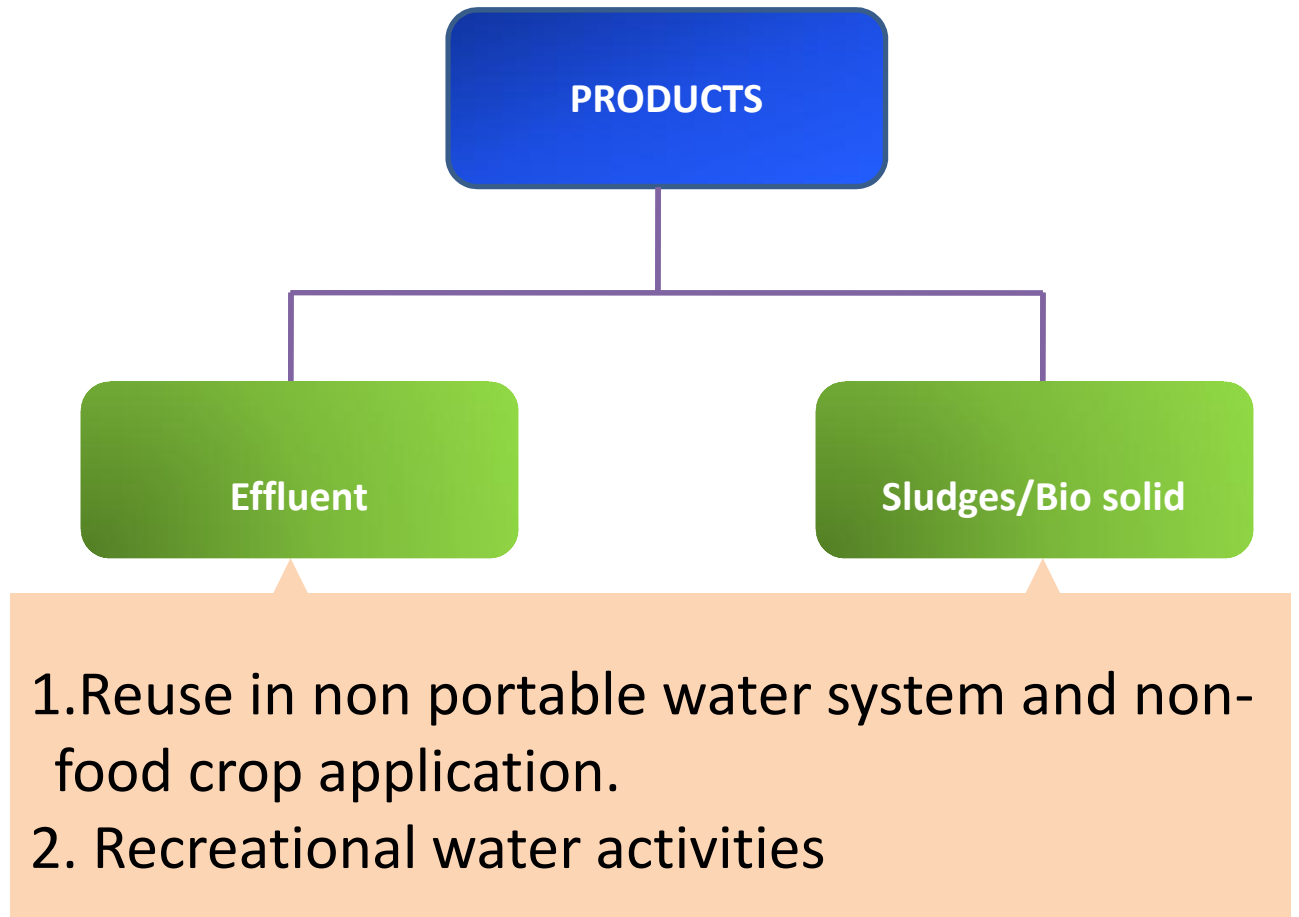
RULES ON DESLUDGING

- Responsibility of premise owner to desludge 1 in every 3 years.
- IWK or permit holders under SPAN can provide service.
- Cost is capped at max USD 106 / 2 cu. m and payment is direct.
- Currently a promotional rate by IWK
 - payment by installment(USD 33/ six months)

Desludging Rules- Transitional Period

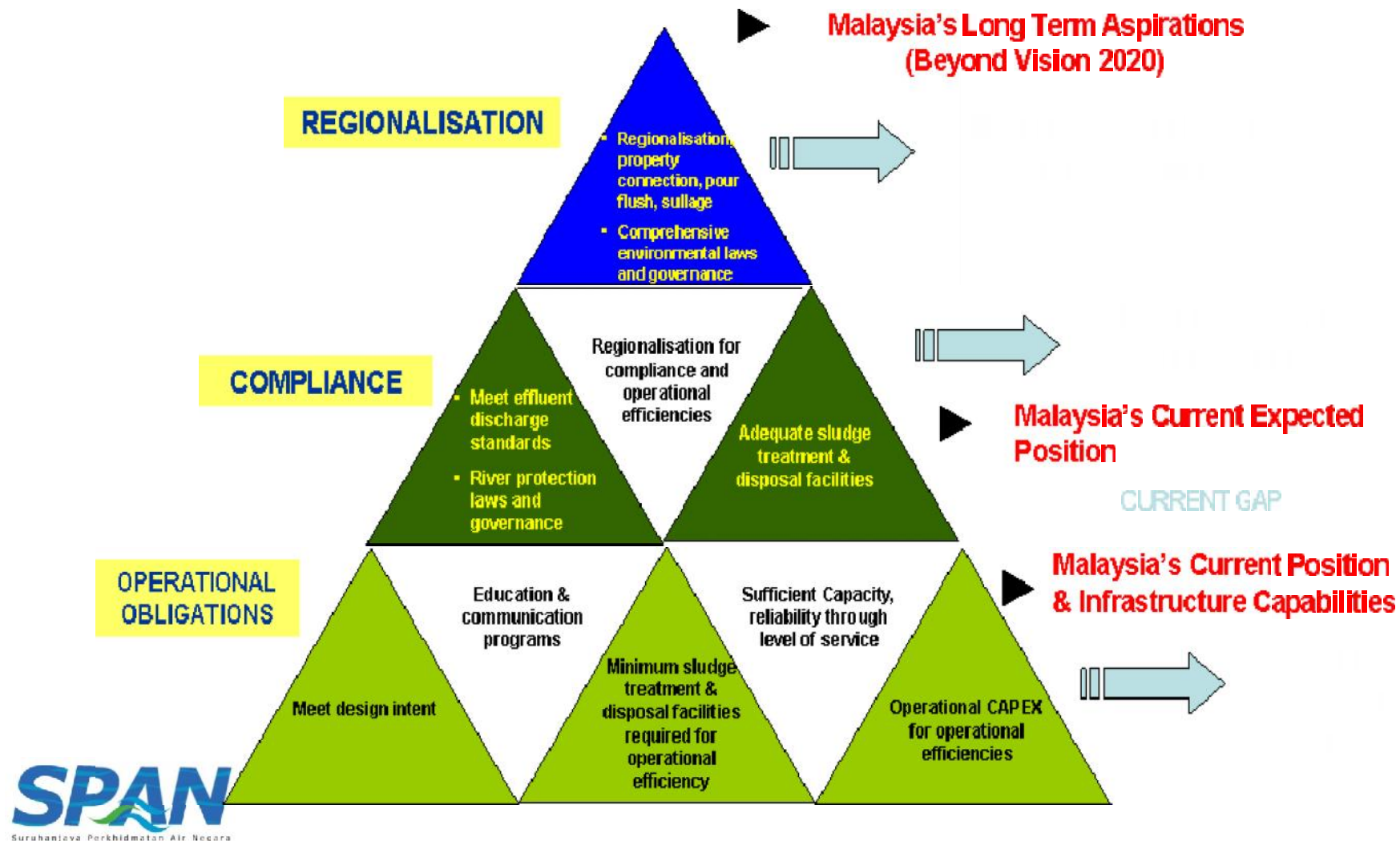


TREATMENT QUALITY



Sewerage Industry Development

The sewerage industry in Malaysia could meet the ultimate objective of overall protection of the environment by 2035, if plans and actions towards this goal are undertaken immediately.



Sanitation Safety Plan – The Need for Cooperation and Learning



- **New to Malaysia**
- **Information sharing**
- **Objectives is SSP to be set**
- **The buy-ins from operators**
- **Policy to be confirmed**
- **Pilot case studies**

THANK YOU