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WATER SUPPLY SUSTAINABILITY FOR PENANG TOWARDS 2050

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1. PENANG SOCIOECONOMIC STATISTICS



The population of Penang was estimated to be about 1.76 million people in 2017.
Source: Department of Statistics, Malaysia.

1. PENANG SOCIOECONOMIC STATISTICS continued



**Penang's contribution to Malaysian GDP
was 6.7% in 2016
(about RM80 billion / USD19.5 billion).**
Sources: Department of Statistics & Malaysian Treasury.

1. PENANG SOCIOECONOMIC STATISTICS continued



Penang's GDP per capita in 2016 was RM47,322.00 (USD11,551.00), the second highest after Kuala Lumpur.

Source: "Penang's Economy is Healthy and Strong",
Malaysiakini online news, 13.10.2017.

2. PENANG 2030: A FAMILY- FOCUSED GREEN AND SMART STATE THAT INSPIRES THE NATION



Themes for Penang 2030 vision (29.8.2018)

- 1 **Increase Liveability** to Enhance Quality of Life
- 2 **Upgrade the Economy** to Raise Household Incomes
- 3 **Empower People** to Strengthen Civic Participation
- 4 **Invest in the Built Environment** to Improve (Societal) Resilience

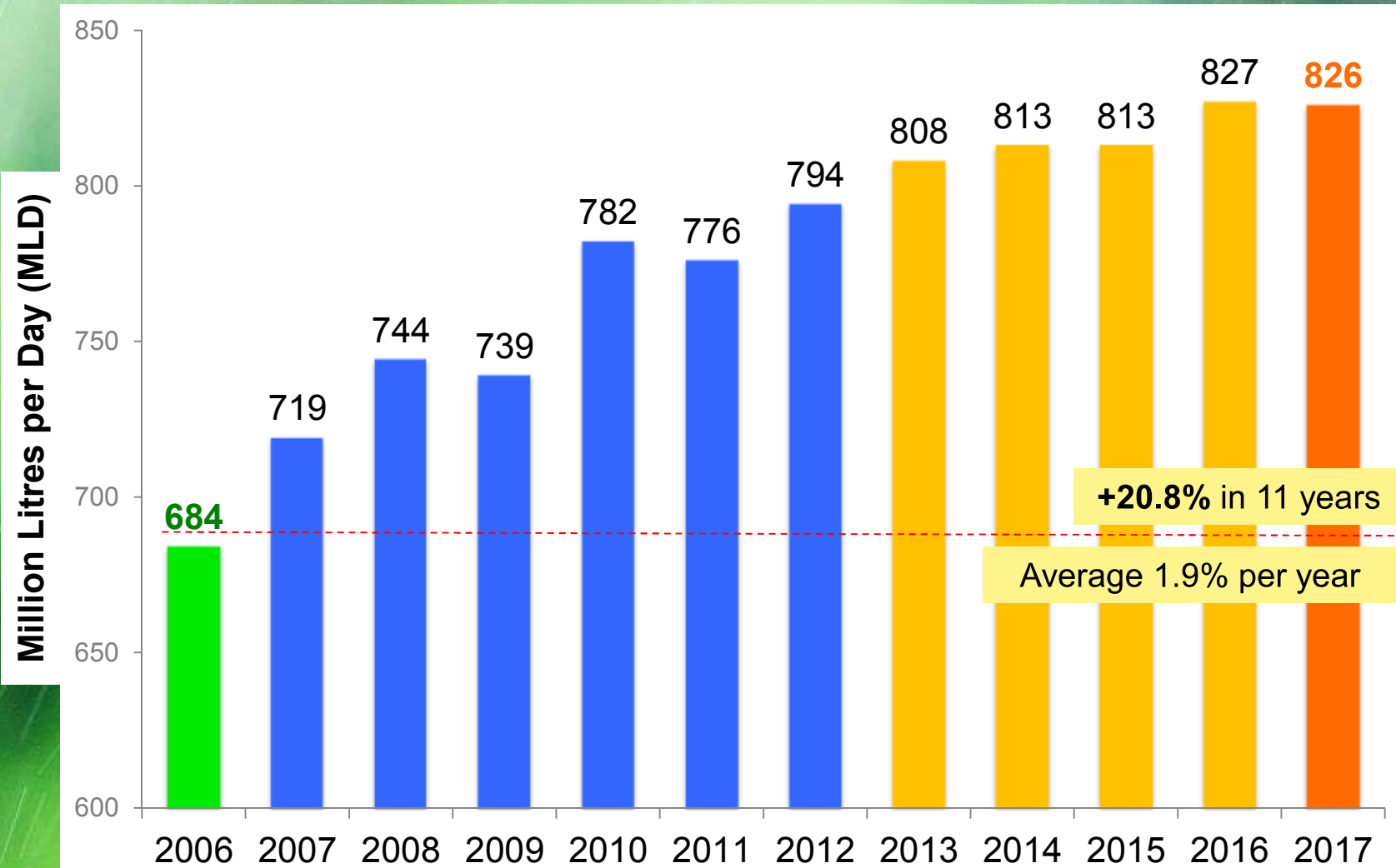
3. WATER & LIFE



“No water, no life. No blue, no green.”
Sylvia Earle, US marine biologist, explorer and author.

**“Penang needs sufficient water supply to achieve
the family-focused, green and smart dream.”**

4. PENANG WATER CONSUMPTION (2006 – 2017)



5. PBAPP: KEY MILESTONES (1999 - 2018)

Year	Key Milestones
1999	CORPORATISATION OF PBAPP Private limited company: Professional, proactive, result-oriented and financially independent water supply operator that serves Penang.
2002	PUBLIC LISTING 100% owned subsidiary of PBA Holdings Bhd which is listed on the Main Board of Bursa Malaysia (Malaysian Bourse).
2003 - 2006	3 INTERNATIONAL ISO CERTIFICATIONS ISO 9001 (Quality), ISO 14001 (Environmental) & ISO 18001 (Occupational Safety & Health).
2007	PENANG WATER SERVICES ACADEMY (PWSA) Promote competency in the Malaysian water industry & create water industry workforce for the future.

5. PBAPP: KEY MILESTONES (1999 - 2018) continued

Year	Key Milestones
2010	WATER CONSERVATION SURCHARGE (WCS) 1 st water demand management surcharge in Malaysia to promote domestic water conservation.
2011	INTERNATIONAL WATERLINKS AWARD Best Water Operator Partnership with PDAM Tirta Musi Palembang.
2013	2 KETTHA INDUSTRY (KIA) NATIONAL AWARDS <ul style="list-style-type: none"> • Water Services Operator of the Year • Efficiency Award
2015	2 AWARDS FROM THE 33RD CONFERENCE OF THE ASEAN FEDERATION OF ENGINEERING ORGANISATIONS <ul style="list-style-type: none"> • ASEAN Outstanding Engineering Award (Sungai Dua Water Treatment Plant) • ASEAN Outstanding Engineering Award (Dato' Ir. Jaseni Maidinsa, CEO, PBAPP)

5. PBAPP: KEY MILESTONES (1999 - 2018) continued

Year	Key Milestones
2017	<p>MANDATORY INSTALLATION OF WATER SAVING DEVICES (WSDs) IN ALL NEW BUILDINGS</p> <p>1st Malaysian state to amend local government by-laws to compel developers to ensure that all new buildings are “water-friendly”.</p>
2018	<p>2 MALAYSIAN WATER ASSOCIATION (MWA) AWARDS</p> <ul style="list-style-type: none"> • Malaysia Water Industry Achievement Award for the Sungai Dua Water Treatment Plant (PBAPP): Best Water Treatment Plant. • Malaysia Water Award for Management: Dato’ Ir. Jaseni Maidinsa (PBAPP CEO) <p>IEM PENANG DISTINGUISHED ENGINEER AWARD 2018</p> <ul style="list-style-type: none"> • Dato’ Ir. Jaseni Maidinsa (CEO of PBAPP) <p>7 “PENANG GREEN OFFICE” AWARDS</p>
2019	<p>PENANG STATE GOVERNMENT INCENTIVE FOR EXCELLENT PERFORMANCE IN 2018</p>

6. PENANG WATER SUPPLY STATISTICS (1999 – 2017)

Item	1999	2017	Increase
1 Population	1.23 million persons	1.76 million persons	43.1%
2 Registered Water Consumers			
• Domestic	301,793	518,001	71.6%
• Trade	36,730	86,546	135.6%
• Total	338,523	604,547	78.6%
3 Average Daily Consumption	700 MLD	826 MLD	18.0%
4 Per capita Domestic Consumption	255 l/c/d	276 l/c/d	8.2%
5 Maximum Designed Capacity of Water Treatment Plants	1,049 MLD	1,617 MLD	54.1%
6 Total length of Pipelines (100mm and above)	3,337 km	4,482 km	34.3%

7. PBAPP WATER SUPPLY KPIS (2017)

Key Performance Indicator (KPI)	PENANG	National Average
1 Water Supply Coverage		
• Urban	100.0%	97.2%
• Rural	99.8%	93.5%
2 Water Treatment Reserve Margin	34.8% (Highest in Malaysia)	13.2%
3 Non-Revenue Water	21.9%	35.2%
4 Profit After Tax or (Deficit)	RM37.3 million or USD9.08 million	(RM28.8 million) (or USD7.01 million)
5 Water Quality	Exceeds QAP set by Health Ministry	N.A.
6 Incidences of Water Rationing	NIL	N.A.

8. PENANG WATER SUPPLY INFRASTRUCTURE (2018)

- 4 dams**
- 58 Reservoirs**
- 9 Water Treatment Plants**
- 4,482 km of Pipelines (100mm and above)**
- 9 Main Pumping Stations**
- Sungai Dua Canal**
- 62.9 sq km of Water Catchments**
- 9 Customer Service Centres**



9. PBAPP WATER SUPPLY PROJECTS (2008 - 2017)

Year	No. of Projects	RM Value
2008	17	12,687,727.72
2009	19	50,050,332.35
2010	18	26,761,361.20
2011	40	72,871,554.30
2012	42	61,602,266.00
2013	25	94,476,167.00
2014	35	63,643,628.10
2015	19	25,211,017.14
2016	47	76,708,552.09
2017	32	62,377,159.00
TOTAL	294	546,389,764.90 (USD132,963,458.00)

10. PENANG'S 5 KEY CHALLENGES

Climate Change:
Longer dry seasons
and Super El Niño.

**Only 1 Major Raw Water
Resource (Sungai Muda):**
Still awaiting Sungai Perak Raw
Water Transfer Scheme
(SPRWTS)

No Water Rationing:
Directive from Penang
State Government.

Ulu Muda (Kedah):
Logging banned recently
but this important regional
water catchment area has
not been gazetted yet.

**High Per Capita
Domestic Consumption:**
276 litres/capita/day (l/c/d)
compared to national
average of 209 l/c/d.

11. PBAPP'S 5 KEY STRATEGIES FOR WATER SUPPLY SUSTAINABILITY TOWARDS 2050

DEMAND Management

- 1 Public Education & Awareness**
 - Alert public on water issues.
 - Cultivate water saving society.
 - Promote sustainable development.
 - Focus on school students.
- 2 Raise the Value of Water**
 - **Tariffs & WCS to reduce consumption.**
 - “More you use, more you pay”.
- 3 WSDs: Water Saving Devices**
 - **Mandatory installation in all new buildings in Penang.**
 - Incentives for retro-fitting in existing buildings.

SUPPLY Management

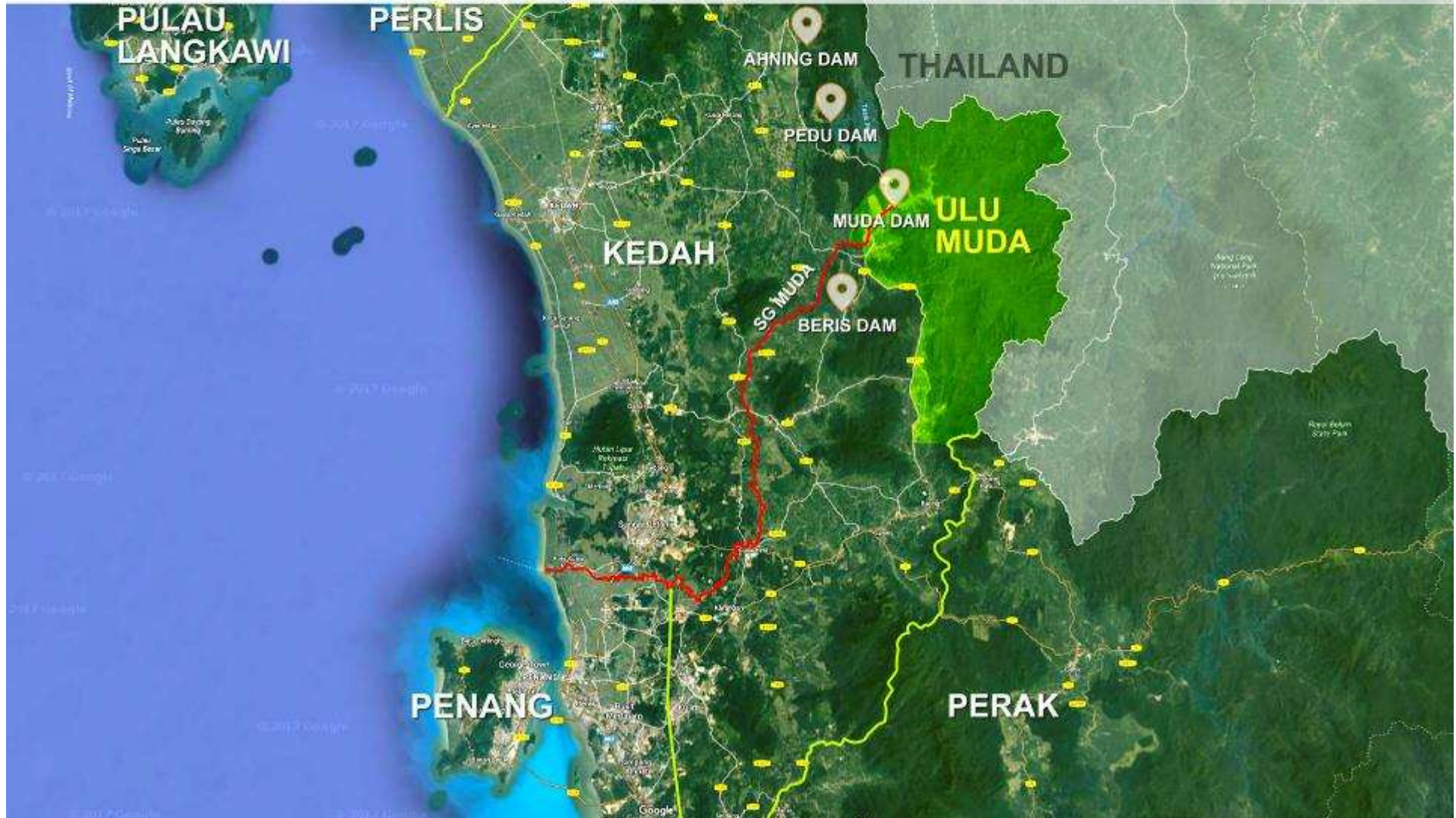
- 4 Holistic Water Supply Management**
 - **Protect water catchments.**
 - Manage NRW.
 - Upgrade water supply infrastructure to mitigate higher risks due to climate change.
- 5 Additional Raw Water Resources**
 - Surface Water (Sungai Perak Raw Water Transfer Scheme)
 - Rainwater harvesting.
 - Water recycling.
 - Desalination.

12. PROTECTING WATER CATCHMENTS: ULU MUDA



**“When the rainforests are gone,
we will know the true value of water.”**

12.1. WHERE IS ULU MUDA? (Google Maps)



12.2. WHAT IS ULU MUDA?



**LARGEST NATURAL
HERITAGE AREA
IN NORTH MALAYSIA**

**163,103
HECTARES OF
RAINFORESTS**

**KEY WATER
CATCHMENT FOR
PERLIS, KEDAH
AND PENANG**

12.3. PBAPP's 15 PRESS RELEASES (2016 – 2018)

16.5.2016	Stop the Logging in Ulu Muda Now
19.5.2016	Firstly, Gazette the Water Catchments in Ulu Muda.
24.5.2016	Seek Federal Compensation after Ulu Muda Catchments are Gazetted.
3.6.2016	Manage Raw Water Resources in the Northern Region on a Regional Basis.
26.8.2016	Focus on Regional Water Security and Sustainability .
8.3.2017	Protect Ulu Muda before it is Too Late.
14.3.2017	Gazette Ulu Muda and Solve the Problem.
23.4.2017	Stop “Gambling” with Water Supply for the 3 Northern States .
9.5.2017	Ulu Muda: Kedah should Clarify the Truth about Logging .
26.10.2017	Has the Muda Dam’s Water Catchment Been Reduced by 87.3%?
24.1.2018	Logging in the Ulu Muda Forest Reserve must be Stopped Immediately and Totally.
7.2.2018	Please Show Evidence that “Logging Did Not Cause Any Impact” in Ulu Muda.
19.6.2018	“ Save Ulu Muda ” theme for World Water Day 2018 event on 23.6.2018
23.6.2018	Logging in Ulu Muda is Not a Forestry Issue, it is a Socioeconomic Threat .
28.6.2018	Hope for a New Era in Regional Raw Water Resources Management.

12.4. WORLD WATER DAY, 23.6.2018: “SAVE ULU MUDA”



12.5. ULU MUDA: THE “GOOD NEWS” MALAY MAIL, 3.9.2018

Xavier thanks Kedah govt for stopping logging activities in Ulu Muda

Published 12 hours ago on 03 September 2018



Water, Land and Natural Resources Minister Dr Xavier Jayakumar thanked the Kedah government for stopping logging activities in the Ulu Muda Forest Reserve. — Picture by Abuazid in Ghana

“It is a very good decision to prevent the sensitive area from becoming polluted and the ecosystem damaged.”

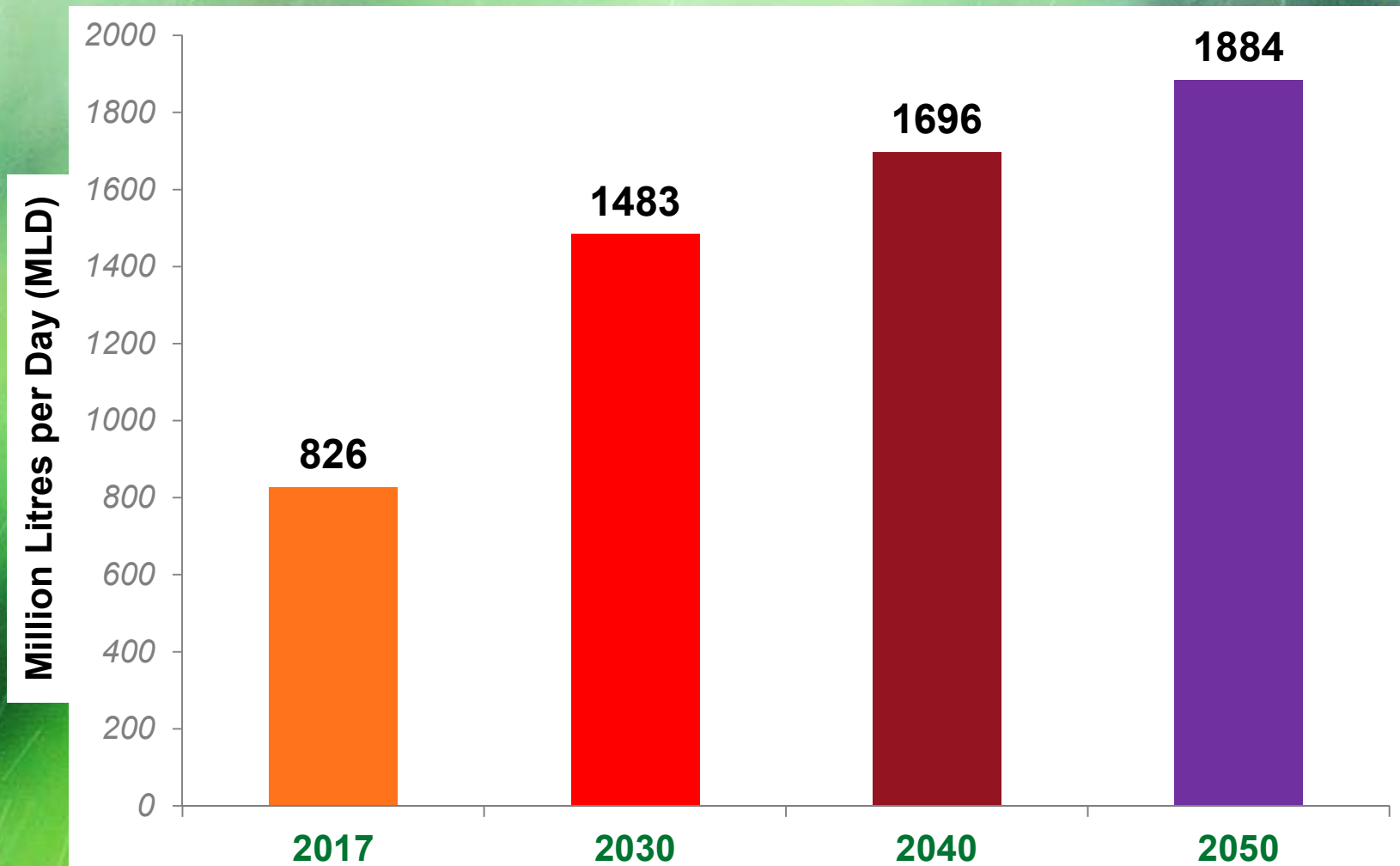
ALOR SETAR, Sept 3 — Water, Land and Natural Resources Minister Dr Xavier Jayakumar has thanked the Kedah government for stopping logging activities in the Ulu Muda Forest Reserve.

He said that it was among the good news he received from Kedah Menteri Besar Datuk Seri Mukhriz Mahathir today as the ministry had sought the cooperation of the Kedah government to gazette the reserve as a water catchment area.

13. RAISING THE VALUE OF WATER TO REDUCE PER CAPITA DOMESTIC CONSUMPTION



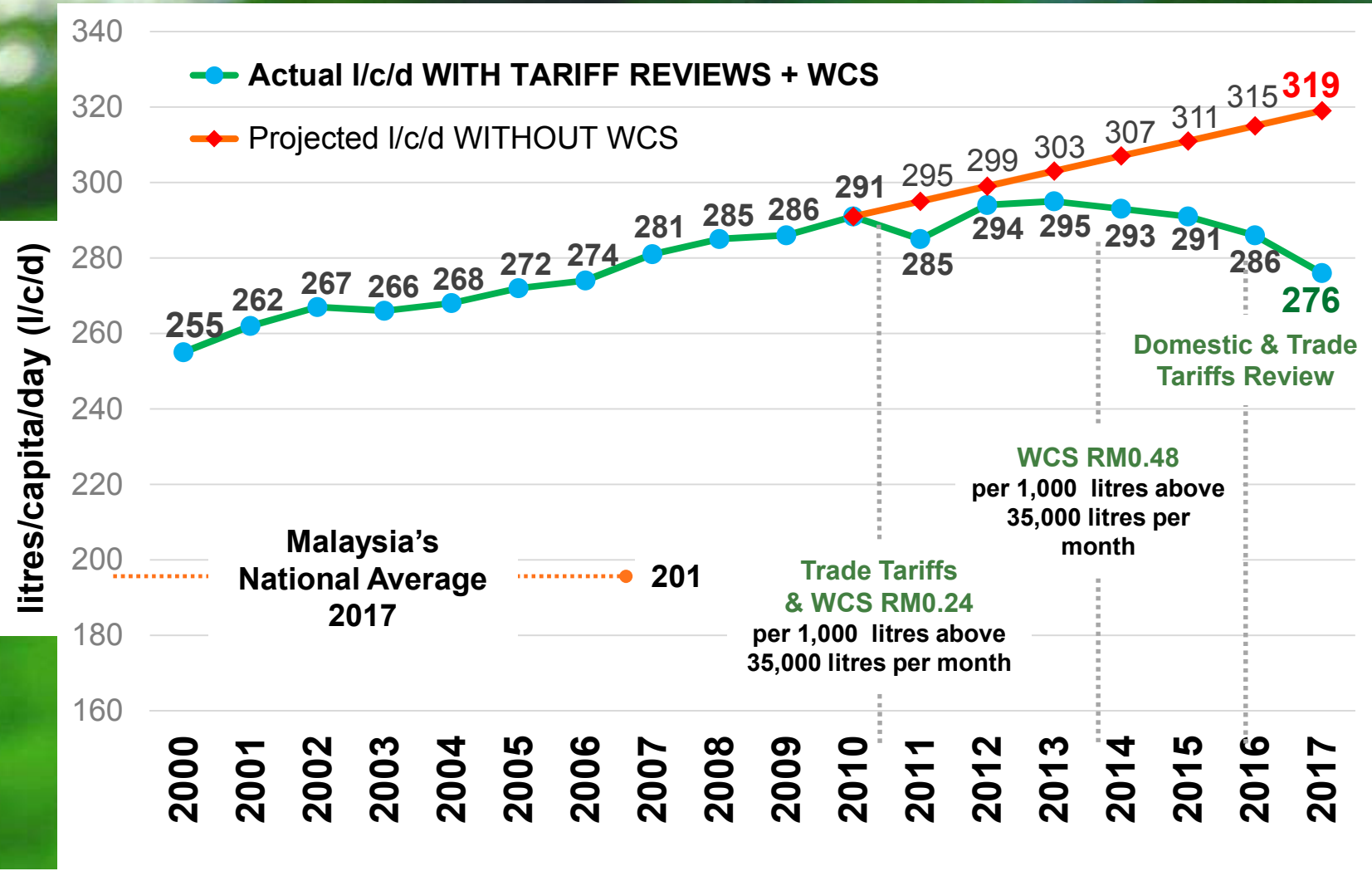
13.1. PROJECTED WATER CONSUMPTION (2017 – 2050)



13.2. PENANG'S WCS

What is it?	Water Conservation Surcharge
When was it introduced?	<ul style="list-style-type: none"> • Introduced in 2010. • Reviewed in 2013.
How much?	<ul style="list-style-type: none"> • 2010: Additional RM0.24 (USD0.06) per 1,000 litres. • From 2013: Additional RM0.48 (USD0.12) per 1,000 litres.
Who pays?	<ul style="list-style-type: none"> • Only domestic consumers. • Only for domestic consumption above 35,000 litres per month.
Why only domestic?	<ul style="list-style-type: none"> • Total domestic consumption is more than total trade consumption in Penang. • Domestic consumption is subsidised.
What are the objectives?	<ul style="list-style-type: none"> • Reduce excessive domestic consumption. • Reduce amount of waste water discharges. • Reduce high domestic water subsidies. • Optimise lifespan of existing water supply infrastructure. • Cultivate a water conservation culture in Penang.

13.3. PER CAPITA DOMESTIC CONSUMPTION IN PENANG (2000 - 2017)



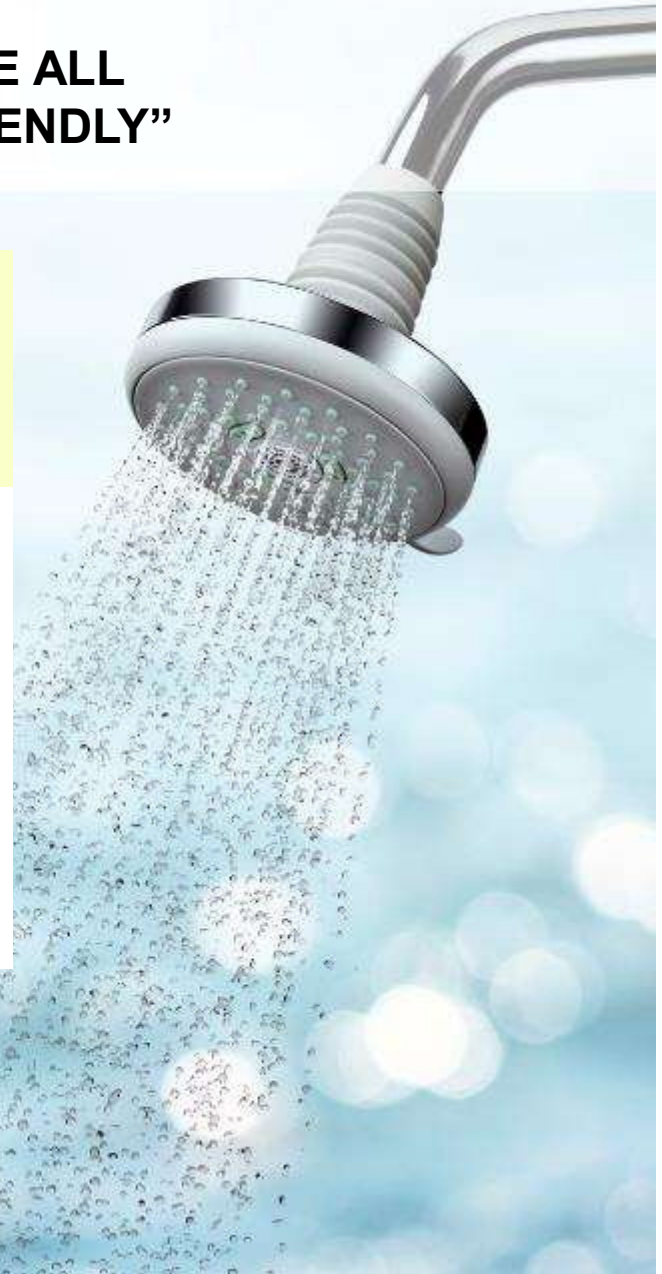
14. MANDATORY INSTALLATION OF WATER SAVING DEVICES (WSDs) IN ALL NEW BUILDINGS IN PENANG



14.1. A NEW REGULATION TO MAKE ALL NEW BUILDINGS “WATER-FRIENDLY”

On 28/11/2017, the Penang State Executive Council approved PBAPP’s proposal for the mandatory installation of WSDs in all new development projects in Penang.

- **First State in Malaysia** to approve such a regulation.
- **Supports “No Water Rationing” policy** by reducing water consumption.
- **“Uniform Building By-Laws (State of Penang) 1986” amended** for local councils to enforce regulation.
- All new buildings in Penang will become **“water-friendly” buildings**.



14.2. WHAT ARE WSDs?



WSDs are devices that **save water automatically.**

- **Showers** (heads, handsets and controls)
- **Tap Equipment** (sinks, bibs and taps)
- **Toilet Fittings** (twin-flushes, bidets, etc)
- **Urinal Fixtures** (flushes, chemicals, etc)
- **Washing Machines and Dishwashers**

14.3. WHO PROMOTES WSDs?

- **Australia, Hong Kong, New Zealand, Singapore, United Kingdom and the USA.**
- SPAN has introduced a voluntary WSD labelling programme in **Malaysia.**



14.4. WHAT IS THE IMPACT OF WSDs?

PBAPP's findings from installing WSDs:

Type of Fittings	Before (litres/minute)	After (litres/minute)	% Savings
Basin Tap	12 - 16	Self-shutting type: 2	83 - 87%
		Tip touch type: 6	50 - 63%
Bib Tap	12 - 15	5	58 - 67%
Shower	14 - 20	12	14 - 40%
Sink Tap	12 - 18	6	50 - 67%



14.5. WSDs: PBAPP's FREE WATER THIMBLE KIT



PBAPP distributes **FREE** water saving thimble kits to the **PUBLIC**

- **6 FREE thimbles** that enable “automatic” water saving.
- **Easy installation** on existing household taps.





THANK YOU

