

# ECOSYSTEM APPROACH IN CONTROLLING DENGUE OUTBREAK IN PANJI ALAM, KUALA TERENGGANU 2016: AN OVERVIEW



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# OUTLINE

- 1. INTRODUCTION
- 2. OBJECTIVES
- 3. METHADODOLOGY
- 4. RESULTS
- 5. DISCUSSION
- 6. CONCLUSION
- 7. REFERENCES

# INTRODUCTION

- The global incidence of dengue has grown dramatically in recent decades.
- World Health Organization (WHO) estimated about 2.5 billion people (two-fifths of the world's population) were at risk for dengue.
- Dengue is described as 'endemic' in more than 100 countries.
- In Malaysia, total dengue cases have increased from 45,070 cases last year to 48,100 cases this year (January to 21 Mei 2016), about 6.7% (3,030 cases).

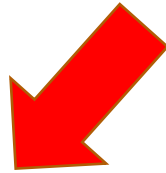
NO	STATES	CUMULATIVE DENGUE CASES EPID WEEK 20 IN 2015	CUMULATIVE DENGUE CASES EPID WEEK 20 IN 2016	%	NO. OF DEATH REPORTED IN 2016
1	Perlis	107	82	-23	1
2	Kedah	371	334	-10	1
3	Pulau Pinang	2102	1724	-18	10
4	Perak	4807	1851	-61	4
5	Selangor	26129	25804	-1	42
6	WP KL &Putrajaya	2792	3437	+23	5
7	Negeri Sembilan	761	1267	+66	10
8	Melaka	739	973	+32	1
9	Johor	2782	6610	+137	10
10	Pahang	1017	1184	+16	6
11	<b>Terengganu</b>	<b>463</b>	<b>1500</b>	<b>+224</b>	<b>13</b>
12	Kelantan	650	1024	+57	1
13	Sarawak	1071	1105	+3	4
14	Sabah	1277	1203	-6	1
15	WP Labuan	2	2		0
	<b>MALAYSIA</b>	<b>45070</b>	<b>48100</b>		<b>109</b> <sup>4</sup>

# DENGUE CONTROL & ECOSYSTEM APPROACH

## VECTOR CONTROL



## DENGUE CONTROL



### MONITORING & SURVEILLANCE

- Better reporting of the disease
- Increase in public knowledge
- Early treatment seeking behaviour

### COMMUNITY PARTICIPATION

- Increase dengue awareness
- Preventive measure

# OBJECTIVES

- To describe ecosystem approach in Panji Alam
- To describe sociodemographic characteristics of dengue patients in Panji Alam ecosystem.
- To describe control measures pertaining to ecosystem approach in controlling dengue outbreak

# METHODOLOGY

- This study was a cross sectional study, done in Panji Alam ecosystem from January to March 2016.
- The data was taken from all dengue cases notified in eDengue database.
- All cases notified in eDengue database had been confirmed of dengue fever through Combo test and dengue serology test.
- Data were analyzed by SPSS version 18.

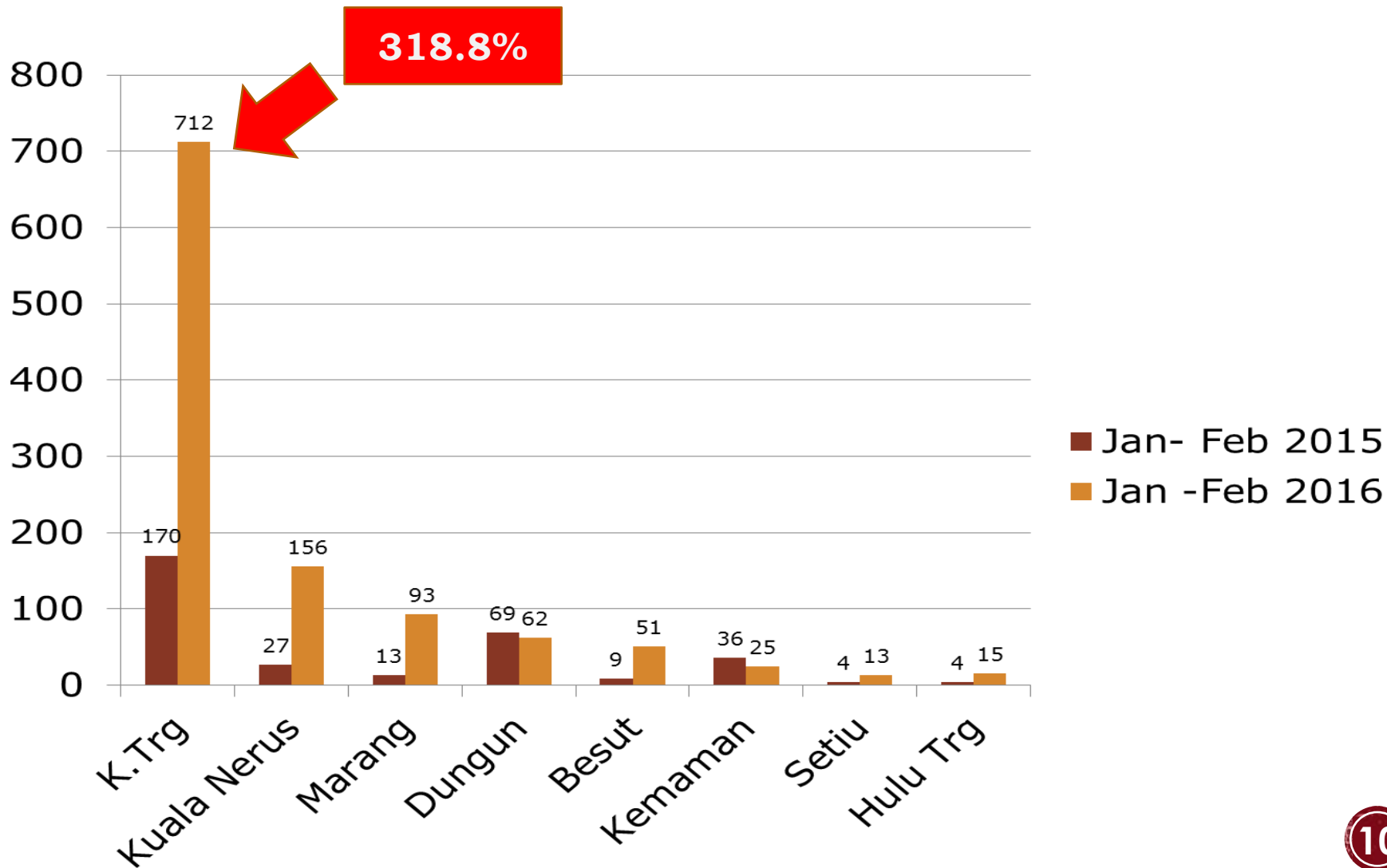


# TERENGGANU



- Terengganu is situated at the south east of peninsular Malaysia
- Area: 13,035 km<sup>2</sup>
- Comprises of 8 districts
- Total population of 1,153,500

# COMPARISON NUMBER OF DENGUE CASES IN TERENGGANU



# KUALA TERENGGANU



- Administrative capital, royal capital and main economic centre of Terengganu
- Area 210 km<sup>2</sup>
- Total population of 161,801
- Health facilities available:
  - Hospital Sultanah Nur Zahirah (HSNZ)
  - Kuala Terengganu Specialist Centre (KTS)
  - SALAM Specialist Centre
  - Klinik Kesihatan Hiliran (KKH)
  - Klinik Kesihatan Ibu & Anak, Air Jernih (KKIA)
  - Klinik Kesihatan Manir (KKM)

# ECOSYSTEM APPROACH

## RISK ASSESSMENT

- Common sharing/public areas
- Stores/market
- Open land
- Abandoned houses
- Drainage system
- Potential breeding sites

## PREVENTION

- Health education and awareness
- Community clean up
- Destruction of breeding site
- Weekly larvaciding and fogging

**The preventive and risk assessment activities involve multiple agencies**

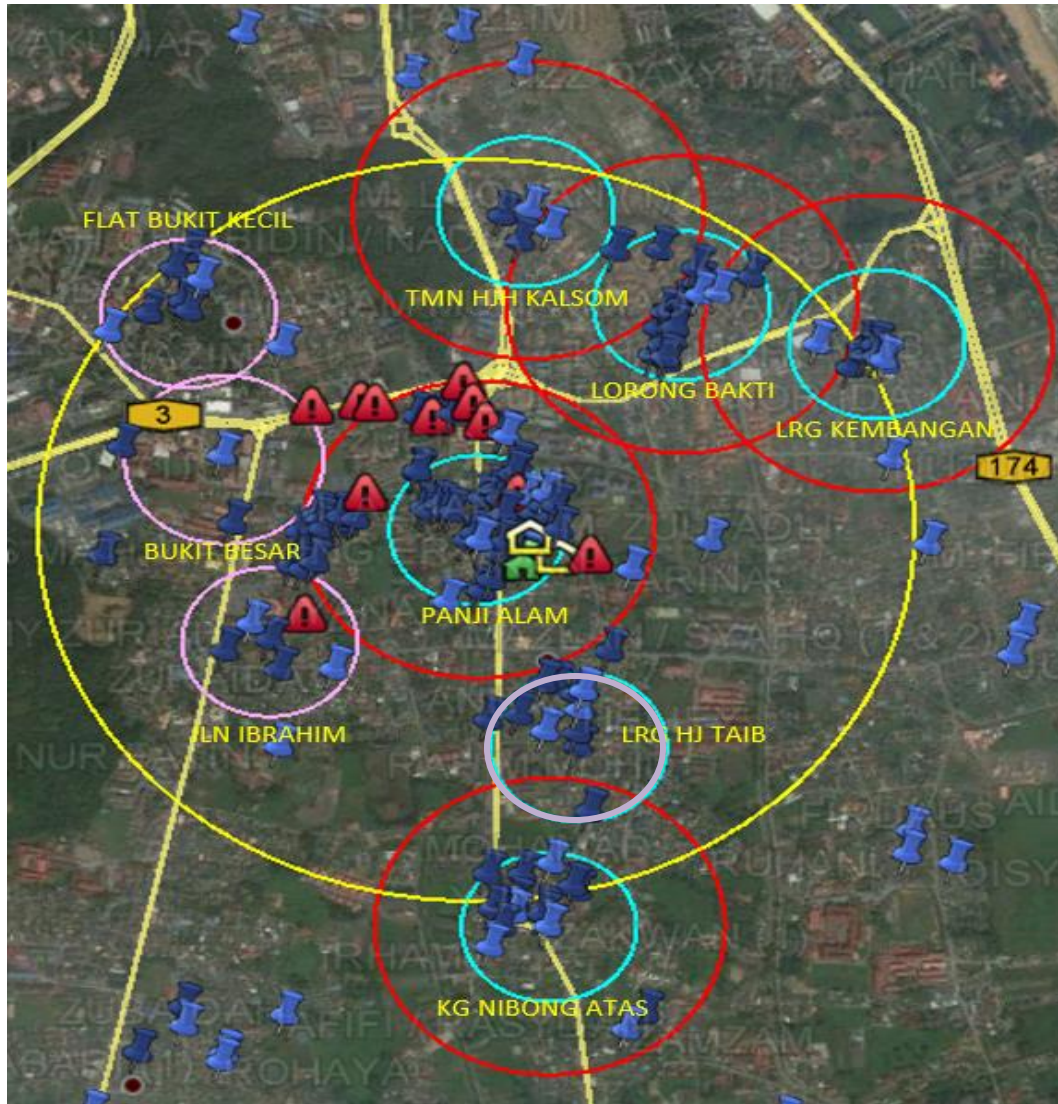
# ECOSYSTEM APPROACH cont..

- A chief assistant officer of environmental health (PPKPK) is in charged for each ecosystem:
  - Plan and coordinate preventive and control activities
  - Familiar with demographic of respective ecosystem
  - Identify problematic localities

<b>NO</b>	<b>ECOSYSTEM</b>	<b>LOCALITIES</b>
1	Jalan Panji Alam	8
2	Kampung Gong Tok Nasek	2
3	Taman Permint Perdana	5
4	Kedai Buloh	3
5	Pulau Duyong	7
6	Losong	3

# PANJI ALAM ECOSYSTEM

# PANJI ALAM ECOSYSTEM



- Jalan Panji Alam
- Taman Hajah Kalsom
- Lorong Bakti
- Kg Nibong Atas
- Bukit Besar
- Lorong Haji Taib
- Flat Bukit Kecil
- Jalan Ibrahim



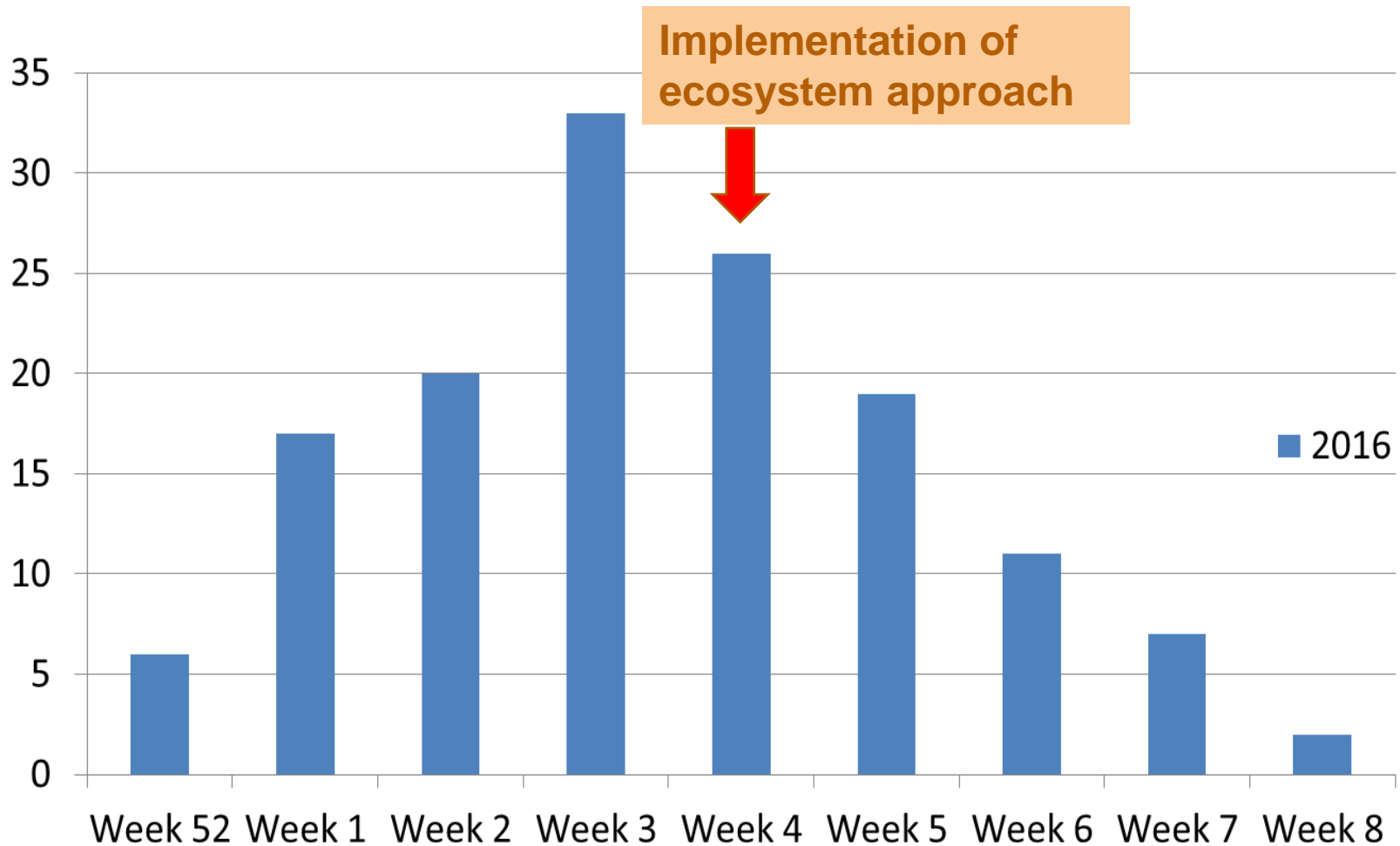
LOCALITIES	NUMBER OF DENGUE CASES	DATE OF OUTBREAK STARTED	DATE OF OUTBREAK ENDED	OUTBREAK PERIOD (DAYS)
<b>Jalan Panji Alam</b>	61	31 Dec 2015	26 Feb 2016	57 ★
<b>Lorong Bakti</b>	30	13 Jan 2016	10 March 2016	57 ★
<b>Kg Nibong Atas</b>	17	10 Jan 2016	29 Feb 2016	50 ★
<b>Bukit Besar</b>	9	3 Jan 2016	29 Jan 2016	26
<b>Lorong Haji Taib</b>	16	27 Jan 2016	23 Feb 2016	27
<b>Taman Hajah Kalsom</b>	6	21 Jan 2016	23 Feb 2016	33 ★
<b>Flat Bukit Kecil</b>	6	17 Jan 2016	7 Feb 2016	21
<b>Jalan Ibrahim</b>	5	20 Jan 2016	19 Feb 2016	20

# ECOSYSTEM APPROACH cont..

- For Panji Alam ecosystem, involved 29 staffs, including:
  - 1 Chief Assistant Officer of Environment Health (PPKPK)
  - 3 Assistant Officer of Environment Health (PPKP)
  - 13 Public Health Assistants (PKA)
  - 12 General Assistants (PA)

<b>SOCIODEMOGRAPHIC</b>	<b>n = 150</b>	<b>%</b>
<b>GENDER</b>		
• MALE	76	51.0
• FEMALE	74	49.0
<b>RACE</b>		
• MALAY	145	97.0
• CHINESE	5	3.0
<b>AGE</b>		
• <10 YEARS OLD	17	11.3
• 11 - 20 YEARS OLD	37	24.7
• 21 - 30 YEARS OLD	34	22.7
• 31 - 40 YEARS OLD	19	12.7
• > 40 YEARS OLD	43	28.6
<b>OCCUPATION</b>		
• GOVERNMENT SECTOR	25	16.7
• PRIVATE SECTOR	31	20.7
• STUDENT	50	33.3
• UNEMPLOYED	44	29.3

# DENGUE CASES REDUCTION AFTER ECOSYSTEM APPROACH



NO	LOCALITIES	SRT/ SRULV	LARVACIDING	PTP	ACD	HE	GOTONG-ROYONG
1	JALAN PANJI ALAM	10	11	8	7	97	5
2	BUKIT BESAR	8	8	3	4	56	7
3	FLAT BUKIT KECIL	7	8	3	4	34	2
4	JALAN IBRAHIM	6	6	5	3	36	2
5	NIBONG ATAS	7	6	3	6	42	4
6	LORONG HAJI TAIB	5	5	4	4	6	4
7	LORONG BAKTI	11	10	6	4	71	4

NAMA LOKALITI	STATUS LOKALITI	STICKY OVITRAP			
		M1	M2	M3	M4
Jalan Panji Alam	Hotspot	Pasang : 02.02.16 Kutip : 09.02.16  <b>0.6</b>  Indoor : Sifar  Outdoor: 6 bekas Positif • 7 ekor <i>Ae.albopictus</i> • 5 ekor <i>Ae.aegypti</i>	Pasang :09.02.16 Kutip :16.02.16  <b>0.2</b>  Indoor : 1 bekas Positif • 1 ekor <i>Ae.aegypti</i>  Outdoor: 2 bekas Positif • 2 ekor <i>Ae.albopictus</i>	Pasang :16.02.16 Kutip :23.02.16  <b>0.9</b>  Indoor : 2 bekas Positif • 2 ekor <i>Ae.aegypti</i>  Outdoor: 4 bekas Positif • 16 ekor <i>Ae.albopictus</i>	Pasang :23.02.16 Kutip :01.03.16  <b>0.1</b>  Indoor : 1 bekas Positif • 2 ekor <i>Ae.albopictus</i>  Outdoor: Sifar
		SOI < 0.5	SOI < 0.5	SOI < 0.5	SOI < 0.5

# DISCUSSION

- Ecosystem approach is an new potential dengue control method that can be implemented.
- It is a flexible control method and can be tailored according to our risk assessment
- Each chief assistant officer of enviromental health (PPKPK) had a good grasp of their respective ecosystem
- Preventive and control activities requires large amount of manpower and resources
- Poor public awareness/socioeconomic status
- Poor cooperation from the public ( gotong royong/fogging)
- Poor city planning/sanitation/drainage system
- Tropical climates /wind changes

# CONCLUSION

- Case based approach in dengue control is not applicable in high endemic areas.
- The impact of the implementation of this ecosystem approach has contributed to the decline in dengue cases in Panji Alam
- However further study need to be done to evaluate the effectiveness of ecosystem approach



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- M G Guzman et al. Dengue: A Continuing Global Threat. Nature Reviews Microbiology.