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WEEKLY EPIDEMIOLOGICAL REPORT

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Climate Change and the Rise of Vector-Borne Diseases

Climate change is one of the most pressing challenges of the 21st century, affecting not only the environment but also public health on a global scale. One of the major public health consequences of climate change is the increasing incidence and spread of vector-borne diseases. These diseases are transmitted by vectors, living organisms such as mosquitoes, ticks, sand flies, fleas, and black flies that carry pathogens from one host to another. Climate-driven environmental changes are now creating favourable conditions for the growth, reproduction, and geographic spread of these vectors, increasing the risk of disease outbreaks worldwide. Vectors are living organisms, often insects or arthropods such as mosquitoes, ticks, or fleas that do not cause disease themselves, but transmit infectious pathogens from one host to another, leading to illness in humans or animals. These diseases are known as vector-borne diseases. They typically include arthropods like mosquitoes (Aedes aegypti, Anopheles), ticks, sand flies, and fleas. These vectors often feed on blood, during which they acquire a pathogen from an infected host (animal or human) and later transmit it to another individual during subsequent bites. Once a vector becomes infected, it may remain infectious for life.

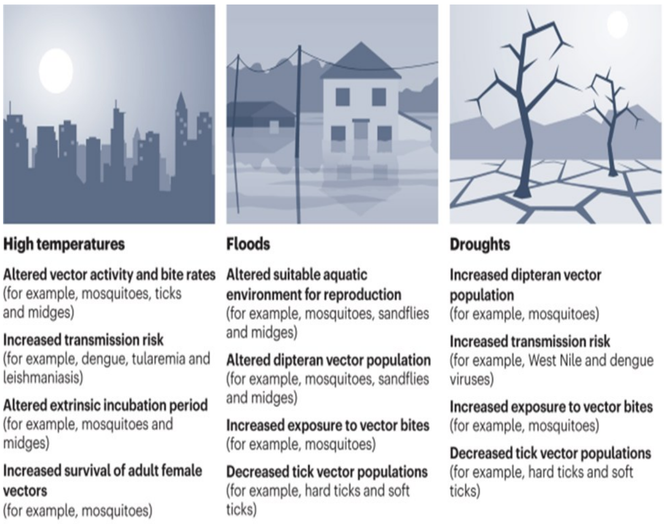
List of Vector-borne diseases:

	Vector	Disease caused	Type of pathogen
MOSQUITO	*Aedes*	Chikungunya	Virus
		Dengue	Virus
		Lymphatic filariasis	Parasite
		Rift Valley fever	Virus
		Yellow Fever	Virus
		Zika	Virus
	Anopheles	Lymphatic filariasis	Parasite
		Malaria	Parasite
		O'nyong'nyong virus	Virus
	Culex	Japanese encephalitis	Virus
		Lymphatic filariasis	Parasite
		West Nile fever	Virus

Vector	Disease caused	Type of pathogen
Aquatic snails	Schistosomiasis (bilharziasis)	Parasite
Culicoides flies	Oropouche fever	Virus
Blackflies	Onchocerciasis (river blindness)	Parasite
Fleas	Plague (transmitted from rats to humans)	Bacteria
	Tungiasis	Ectoparasite
Lice	Typhus	Bacteria
	Louse-borne relapsing fever	Bacteria
Sandflies	Leishmaniasis	Parasite
	Sandfly fever (Phlebotomus fever)	Virus
Ticks	Crimean-Congo haemorrhagic fever	Virus
	Lyme disease	Bacteria
	Relapsing fever (borreliosis)	Bacteria
	Rickettsial diseases (e.g., spotted fever and Q fever)	Bacteria
	Tick-borne encephalitis	Virus
	Tularaemia	Bacteria
Triatome bugs	Chagas disease (American trypanosomiasis)	Parasite
Tsetse flies	Sleeping sickness (African trypanosomiasis)	Parasite

Several vector-borne diseases mentioned above are closely linked to climate change and are reported frequently across various regions of the world. These include **malaria**, which remains a major public health challenge in many tropical areas, and **dengue fever**, which has rapidly expanded its global reach in recent years. Other commonly reported diseases are **chikungunya**, **Zika virus**, and **yellow fever**, all primarily transmitted by *Aedes* mosquitoes. **Japanese encephalitis** and West Nile **virus** are also significant concerns, particularly in parts of Asia and the Americas. Additionally, **Lyme disease**, which is spread by ticks, is increasingly observed in temperate regions, while rift valley **fever** continues to impact both humans and animals in parts of Africa and the Middle East. The rising incidence of these diseases highlights the growing influence of climate-related environmental changes on vector behaviour and disease transmission. These diseases affect **millions of people globally** each year and contribute substantially to the burden of illness, particularly in tropical and subtropical regions

Effects of climate change on vector-borne diseases



The picture provides an overview of how climate extremes high temperatures, floods, and droughts, affect vector populations.

Climate change is influencing vector-borne disease dynamics in several ways: Many vectors, such as mosquitoes and ticks, are highly sensitive to temperature. Warmer conditions accelerate their life cycles, increasing reproduction rates and biting frequency. Rainfall plays a crucial role in creating breeding habitats for mosquitoes. Both heavy rainfall and standing water after floods provide ideal conditions for mosquito larvae to develop. Conversely, drought conditions may force people to store water in containers, which can become breeding grounds for vectors. Changes in humidity and the extension of warmer seasons allow vectors to remain active for longer periods throughout the year. This leads to longer transmission seasons and increases the overall risk of outbreaks. Areas that were once too cold for vector survival are now becoming suitable due to warming temperatures. For example, *Aedes aegypti* and *Aedes albopictus,* vectors of dengue, chikungunya, and Zika, have expanded into new areas of Europe and North America. Where they were not previously established. Scientific projections estimate that the land area suitable for *Aedes aegypti* could increase by 8% to 13% between 2061 and 2080, making millions more people vulnerable to mosquito-borne diseases.

Climate change and climate variability in Sri Lanka are expected to lead to **rising temperatures and altered rainfall patterns**, which may create favourable conditions for the **spread of vector-borne diseases** such as **malaria, dengue fever, and chikungunya**. Warmer climates can accelerate the breeding cycles and biting rates of disease-carrying mosquitoes, increasing the potential for outbreaks. **Scientific studies suggest that under both high and low greenhouse gas emission scenarios**, Sri Lanka is likely to experience a **rising risk of malaria and dengue transmission** in the coming years.

Some groups are more vulnerable due to a range of social, economic, and environmental factors. These include the elderly, children, people with pre-existing health conditions, low-income and marginalised communities, people living in poorly constructed housing, those with limited access to healthcare and sanitation and athletes and outdoor recreationists. For example, people living in informal settlements or flood-prone areas may have greater exposure to breeding sites for mosquitoes. Similarly, agricultural and outdoor workers may be at higher risk of tick bites and related infections.

Prevention of climate change-related vector-borne disease**:** **Collaborative action** from governments, health systems, researchers, communities, the environmental sector and private sectors is essential to reduce vulnerability, strengthen resilience, and protect populations from the growing threat of vector-borne diseases driven by climate change. Strengthen national and local disease surveillance systems to detect outbreaks early and monitor changes in vector populations due to climate trends, and educate communities on recognizing symptoms of vector-borne diseases, avoiding mosquito bites by using insect repellents, wearing protective clothing, and installing window screens, reducing mosquito breeding sites by draining stagnant water from containers, gutters, and tires. Ensure healthcare workers are trained to diagnose and treat climate-sensitive diseases, advise on preventive measures and report suspected outbreaks promptly. Efforts to reduce greenhouse gas emissions, such as cutting down fossil fuel use, improving public transport, and promoting renewable energy, have dual benefits — they protect the planet and reduce health risks. For example, walking or cycling reduces emissions and improves physical fitness, and urban green spaces help cool cities and improve air quality. Health professionals can play a key role by advocating for a Climate-resilient health system, community-based vector control programs and inclusion of health in national climate adaptation plans.

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Table 1: Selected notifiable diseases reported by Medical Officers of Health 14th – 20th June 2025 (25th Week)

RDHS	Dengue Fever		Dysentery		Encephalitis		En. Fever		F. Poisoning		Leptospirosis		Typhus F.		Viral Hep.		H. Rabiies		Chickenpox		Meningitis		Leishmania-		Tuberculosis		WRCD	
	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	T*	C**
Colombo	316	6528	1	18	0	4	0	6	0	5	9	241	0	5	0	11	0	0	17	281	1	33	0	1	42	969	100	100
Gampaha	217	4197	1	26	0	24	0	1	2	67	22	442	0	8	3	10	0	0	20	462	6	83	0	22	27	548	100	100
Kalutara	62	1274	1	25	0	6	0	10	0	28	14	363	0	1	0	4	0	0	19	482	0	24	0	1	17	308	100	100
Kandy	192	1974	0	36	0	3	0	5	2	19	10	153	1	32	0	6	0	0	12	248	1	15	2	38	12	354	96	100
Matale	24	752	1	15	0	1	0	0	1	50	11	138	0	3	0	6	0	0	0	69	2	6	17	148	7	81	100	100
Nuwara Eliya	20	152	1	42	0	4	0	4	0	45	6	65	3	33	0	0	0	0	4	134	2	15	0	0	2	138	100	100
Galle	73	1072	0	24	0	3	0	1	2	39	20	444	4	46	0	7	0	1	17	412	6	96	0	3	3	243	95	100
Hambantota	22	467	0	16	0	4	0	0	1	4	5	234	0	19	1	4	0	0	2	190	0	13	5	156	9	73	100	100
Matara	39	891	0	8	0	2	0	1	1	5	17	274	0	11	2	9	0	0	11	228	0	24	0	57	1	83	100	100
Jaffna	24	749	1	48	0	2	0	10	0	30	1	120	10	358	0	2	0	1	3	232	0	16	0	0	4	110	100	93
Kilinochchi	0	63	0	10	0	0	0	4	0	5	0	59	0	11	0	1	0	0	0	4	0	0	0	1	1	30	100	100
Mannar	4	112	0	5	0	0	0	0	0	2	0	20	0	13	0	0	0	0	0	16	0	12	1	1	0	24	100	100
Vavuniya	4	53	1	9	0	0	0	1	0	36	2	61	0	7	0	0	0	0	4	31	1	14	1	13	1	28	100	100
Mullaitivu	1	43	0	5	0	0	0	1	0	23	1	49	0	7	0	0	0	0	0	19	0	5	0	2	0	18	100	100
Batticaloa	40	1428	2	90	0	11	0	0	0	121	3	71	0	1	1	17	0	0	4	121	0	24	0	1	5	76	92	100
Ampara	6	140	0	28	0	9	0	0	0	8	1	131	0	2	0	3	0	1	8	103	2	25	0	16	0	31	100	100
Trincomalee	16	827	2	30	0	2	0	1	0	27	0	103	0	9	0	5	0	0	3	76	0	10	0	3	7	64	100	100
Kurunegala	77	841	1	28	0	12	0	1	0	25	15	454	1	22	2	6	0	1	23	416	6	87	20	298	5	171	100	100
Puttalam	10	399	1	18	0	3	0	0	0	5	2	177	0	28	0	1	0	1	2	92	1	53	0	18	0	92	100	100
Anuradhapura	8	360	0	23	0	6	0	3	0	17	2	273	0	15	0	10	0	0	2	185	0	42	10	384	6	142	100	100
Polonnaruwa	21	189	3	12	1	4	0	1	0	6	10	189	0	1	1	17	0	0	5	103	0	11	14	206	3	45	100	90
Badulla	31	443	1	20	0	8	0	3	0	2	2	179	1	17	2	25	0	0	11	234	2	44	2	24	7	156	100	100
Monaragala	24	510	0	12	0	3	0	0	0	4	10	385	0	23	2	16	0	0	3	84	0	30	2	104	2	62	100	100
Ratnapura	118	2935	2	77	0	5	0	3	4	26	26	871	1	18	1	8	0	1	4	242	3	66	0	108	8	210	100	100
Kegalle	48	847	1	43	1	11	0	9	1	29	32	425	0	8	0	9	0	0	26	470	7	65	0	18	12	151	100	100
Kalmunai	6	265	2	21	0	4	0	0	0	18	4	70	0	1	0	2	0	1	4	93	0	27	0	0	3	71	100	100
SRILANKA	**1403**	**27511**	**22**	**689**	**2**	**131**	**0**	**65**	**14**	**646**	**225**	**5991**	**21**	**699**	**15**	**179**	**0**	**7**	**204**	**5027**	**40**	**840**	**74**	**1623**	**184**	**4278**	**99**	**99**

Source: Weekly Returns of Communicable Diseases (esurvillance.epid.gov.lk). T=Timeliness refers to returns received on or before 27th June, 2025 Total number of reporting units 361 Number of reporting units data provided for the current week: 360 C**-Completeness ·
A = Cases reported during the current week. B = Cumulative cases for the year.

Table 2: Vaccine-Preventable Diseases & AFP

14th – 20th June 2025 (25th Week)

Disease	No. of Cases by Province									Number of cases during current week in 2025	Number of cases during same week in 2024	Total number of cases to date in 2025	Total number of cases to date in 2024	Difference between the number of cases to date in 2025 & 2024
	W	C	S	N	E	NW	NC	U	Sab					
AFP*	00	00	00	00	00	0	00	00	00	00	01	28	36	-22.2%
Diphtheria	00	00	00	00	00	00	00	00	00	00	00	00	00	0 %
Mumps	03	00	01	01	01	00	00	00	01	07	05	123	144	-14.5 %
Measles	00	00	00	00	00	00	00	00	00	00	02	01	214	-99.5%
Rubella	00	00	00	00	00	00	00	00	00	00	00	01	02	-50%
CRS**	00	00	00	00	00	00	00	00	00	00	00	01	00	0 %
Tetanus	00	00	00	00	00	00	00	01	00	01	00	04	04	0 %
Neonatal Tetanus	00	00	00	00	00	00	00	00	00	00	00	00	00	0 %
Japanese Encephalitis	00	00	00	00	00	00	00	00	00	00	00	04	01	300 %
Whooping Cough	01	00	00	00	00	00	00	00	00	01	07	13	25	-48 %

Key to Table 1 & 2

Provinces: **W**: Western, **C**: Central, **S**: Southern, **N**: North, **E**: East, **NC**: North Central, **NW**: North Western, **U**: Uva, **Sab**: Sabaragamuwa.

RDHS Divisions: **CB**: Colombo, **GM**: Gampaha, **KL**: Kalutara, **KD**: Kandy, **ML**: Matale, **NE**: Nuwara Eliya, **GL**: Galle, **HB**: Hambantota, **MT**: Matara, **JF**: Jaffna, **KN**: Killinochchi, **MN**: Mannar, **VA**: Vavuniya, **MU**: Mullaitivu, **BT**: Batticaloa, **AM**: Ampara, **TR**: Trincomalee, **KM**: Kalmunai, **KR**: Kurunegala, **PU**: Puttalam, **AP**: Anuradhapura, **PO**: Polonnaruwa, **BD**: Badulla, **MO**: Moneragala, **RP**: Ratnapura, **KG**: Kegalle.

Data Sources:

Weekly Return of Communicable Diseases: Diphtheria, Measles, Tetanus, Neonatal Tetanus, Whooping Cough, Chickenpox, Meningitis, Mumps., Rubella, CRS,

Special Surveillance: AFP* (Acute Flaccid Paralysis), Japanese Encephalitis

CRS** =Congenital Rubella Syndrome

NA = Not Available

Number of Malaria Cases Up to End of June 2025,

02

All are Imported!!!

Comments and contributions for publication in the WER Sri Lanka are welcome. However, the editor reserves the right to accept or reject items for publication. All correspondence should be mailed to The Editor, WER Sri Lanka, Epidemiological Unit, P.O. Box 1567, Colombo or sent by E-mail to **chepid@sltnet.lk. Prior approval should be obtained from the Epidemiology Unit before publishing data in this publication**

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