

# COULD UPCOMING WARMER MONTHS SLOW DOWN THE COVID-19? KEY POLICY MESSAGES UNDER THE UNCERTAINTIES

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***The article is benefited & inspired from the discussion with Dr Sanjay Srivastava in his personal capacity as former senior scientist of Indian Space Research Organization (1991-2010).***

A report of the Massachusetts Institute of Technology (MIT), released on 20 March 2020, reveals that most coronavirus (COVID-19) transmission were found to be in the regions with low temperatures. It also notes that warmer places appear to have a comparative advantage in terms of slow transmission of the COVID-19. The researchers in Spain and Finland inform that transmission of the COVID-19 was accelerated in dry conditions associated with low temperature between minus 2 and 10 degree Celsius. A group of scientists in China reports those cities with higher temperatures and more humid environments had a slower rate of infection transmission early in the outbreak.

As COVID-19 continues to spread, the obvious question is whether the upcoming summer months in Asia and the Pacific will slow it down. This is a fundamental question that requires the understanding of COVID-19 risk, its transmission pathways and seasonal variability. The risk analysis presented below addresses this and suggests three key policy messages for managing the risk of pandemics.

## ***The risk of COVID-19, its transmission pathway and rapid spreads?***

A scientific understanding that relates to the origin of Coronavirus (COVID-19) in humans is still evolving. The available evidence suggests that it has a natural animal origin and most probably has its ecological reservoir in bats. The COVID-19 was first identified in Wuhan, Hubei Province, China, with 27 confirmed cases in December 2019. The initial cases were found to have a direct link to the Huanan Wholesale Seafood Market in Wuhan, where seafood, wild, and farmed animal species were sold. Environmental samples taken from this market suggests that the market in Wuhan City was the source of COVID-19 outbreak.

The risk of a virus lies in its transmissibility. It's indicated by the basic reproduction number ( $R_0$ ) – a central concept in infectious disease epidemiology that indicates the risk of an infection agent with respect to epidemic spread. A group of Chinese epidemiologists reports the mean  $R_0$  for COVID-19 is around 2.5, while it's in the range of 1.4 for others. That's the reason why COVID-19 spreads exponentially.

Started in China, the virus then spreads through human to human exponentially. Air travel has been the main route by which the virus has spread around the world so rapidly. But once it starts spreading within a community, it is close contact between people that drives the transmission. Many governments around the world recognized this and intervened through large-scale lockdown of public places, cities and all transport networks to promote social distancing. It was a risk informed measure that's working on the ground.

### ***Is COVID-19 sensitive to weather and climate factors?***

A closely related coronavirus that caused the SARS outbreak in 2003 has been found to [survive best in cooler, drier conditions](#). The higher the temperature and humidity, the shorter the virus survived. Epidemiologists however warn that so little is known about COVID 19 and it's difficult to predict its transmission pathways on the basis of weather or climate factors alone.

But why are related coronaviruses seasonal, and why does that offer hope to predict the transmission pathways of the COVID-19 in coming months? Coronaviruses are a family of "[enveloped viruses](#)" –oil coated that stick out like spikes of a crown. Research suggests that this oily coat makes the viruses more susceptible to heat than those that do not have one. Most enveloped viruses tend to show strong seasonality. Experts say - as temperatures rise, COVID-19 floats in the air or attaches to surfaces -- both places where it can survive for only a short time. But once in the body, its ability to infect does not decrease.

The upcoming months, April to September including those of Asian Summer monsoon, are likely to be warmer with the temperature ranging between 30-50 degree Celsius and associated high humidity. Further, in the recent years, temperatures are breaking records worldwide. Heat waves are seen widespread including in Asia-Pacific. The Intergovernmental Panel on Climate Change (IPCC) 2018 report emphasizes that global warming of 1.5°C-2°C will drive local average temperatures upwards and increase the frequency, intensity, and duration of heat waves. These weather and climate trends may affect adversely the COVID 19 transmission pathways and spreads – that may be good news.

### ***Managing COVID 19 risks – three key policy messages:***

- The reality of COVID 19 pandemics is that its carrier is human and there is no vaccine or preventive medicine yet. Therefore, we need to develop a culture of prevention by behavioral changes with social distancing, health and hygiene as the new normal.
- Upcoming warmer months may slow down the spreads of COVID 19 but not the risk that exists in humans and transmit through the contacts.
- Pandemic preparedness in terms of resilient health infrastructure and social protections continues to be priority to save lives, reduce the infection and vulnerabilities.