



Climate Change & Infectious Diseases

Why in News

According to a recent study published in the journal '**Science of the Total Environment**', scientists have found that climate change parameters accounted for 9-18% of the total infectious disease cases.

- Climate change driven by **anthropogenic activities** may challenge the gains in public health over the past many years, particularly in a country like India that ranks high in the list of **climate-vulnerable countries** in the world.

Key Points

▪ Highlights of the Report:

- **Vulnerability of Children:** Globally, it is estimated that children are to bear most of the burden of disease due to climate change, with the poorest disproportionately affected.
 - The higher risk associated with children is due to the combination of physiological vulnerability as well as the risk of exposure.
- **Affecting Factors:** Climate parameters like temperature, humidity, rainfall, solar radiation, and wind speed were significantly associated with the infectious diseases-- gastrointestinal diseases, respiratory diseases, vector-borne diseases, and skin diseases.
- **Impact:** Socio-economic conditions and child anthropometry (study of the measurements and proportions of the human body) modified the climate-disease association with a high proportion of children found suffering from stunting, wasting, and underweight conditions.

▪ Example of Climate Change and Infectious Diseases Linkage:

- Malaria is of great public health concern, and seems likely to be the vector-borne disease most sensitive to long-term climate change.
 - Malaria varies seasonally in highly endemic areas. The link between malaria and extreme climatic events has long been studied in India, for example.
 - Early last century, the river-irrigated Punjab region experienced periodic malaria epidemics.
 - Excessive monsoon rainfall and high humidity was identified early on as a major influence, enhancing mosquito breeding and survival.
 - Recent analyses have shown that the malaria epidemic risk increases around five-fold in the year after an El Niño event. [//](#)

Environmental changes	Example diseases	Pathway of effect
Dams, canals, irrigation	Schistosomiasis	▲ Snail host habitat, human contact
	Malaria	▲ Breeding sites for mosquitoes
	Helminthiasis	▲ Larval contact due to moist soil
Agricultural intensification	River blindness	▼ Blackfly breeding, ▼ disease
	Malaria	Crop insecticides and ▲ vector resistance
Urbanization, urban crowding	Venezuelan haemorrhagic fever	▲ rodent abundance, contact
	Cholera	▼ sanitation, hygiene; ▲ water contamination
	Dengue	Water-collecting trash, ▲ <i>Aedes aegypti</i> mosquito breeding sites
Deforestation and new habitation	Cutaneous leishmaniasis	▲ proximity, sandfly vectors
	Malaria	▲ Breeding sites and vectors, immigration of susceptible people
	Oropouche	▲ contact, breeding of vectors
Reforestation	Visceral leishmaniasis	▲ contact with sandfly vectors
Ocean warming	Lyme disease	▲ tick hosts, outdoor exposure
Elevated precipitation	Red tide	▲ Toxic algal blooms
	Rift valley fever	▲ Pools for mosquito breeding
	Hantavirus pulmonary syndrome	▲ Rodent food, habitat, abundance

▲ increase ▼ reduction

Way Forward

- Changes in infectious disease transmission patterns are a likely major consequence of climate change. Thus, there is a need to learn more about the underlying complex causal relationships, and apply this information to the prediction of future impacts, using more complete, better validated, integrated, models.
- Government and policymakers need to prioritize effective measures for child health as the present association may increase disease burden in the future under climate-change scenarios in an already malnourished pediatric population through multiple pathways.

Source: PIB

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