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Multi-hazard mitigation challenges during the Covid-19 crisis? Evidence from the tropical regions

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Across the world, health and disaster managers face the challenge of responding to natural hazards such as cyclones, floods, and droughts while minimizing the impacts of Covid-19. The tropical cyclones and floods affect vulnerable communities and result in losses of life and damages. The drought situations can weaken the agricultural economy and local livelihoods. How these impacts could be amplified by the Covid-19, mainly during the monsoon season, is of great importance for informed-planning. The present study aims to assess exposure to hydro-meteorological hazards (tropical cyclones, floods, and droughts) in terms of the number of people affected, economic activities exposed, and how these hazards superimposed over the Covid-19 pandemic could impact the different phases of disaster risk management cycle. The study focuses on three deltas, namely, Ganges-Brahmaputra-Meghna (GBM) delta spanning over India and Bangladesh, and Red River (RR) and Mekong River (MK) deltas in Vietnam.

Present research found that the GBM delta suffers from frequent cyclones and floods and less with coastal floods and droughts, whereas the MK delta suffers from riverine and coastal floods and droughts. The RR delta faces frequent tropical cyclones, riverine and coastal floods, and droughts. Populations living in Red delta (100%) exposed more to tropical cyclone as compared to GBM (2.22%) and the Mekong delta (0%) with 50-year return period (RP). Similarly, about 36.46 (0.28), 83.24 (47.23), and 72.76 (33.49) % population of the GBM, RR, and MK deltas are exposed to riverine (coastal) flood hazards with 10-year RP, respectively. During May-Aug 2020, a maximum of 0.76, 100, and 33.49 % population in a month was exposed to meteorological drought (SPI3 below -1) in the GBM, RR, and MK deltas, respectively.

The results include probabilistic exposure of urban area, cropland, livestock, and GDP to major hydro-meteorological hazards on a similar line. In the second part, the study explores the number of Covid-19 cases reported at the administrative level 2 and draws qualitative inferences on how tackling multi-hazards in the deltas could have become more challenging during the ongoing pandemic and vice versa. The study recommends that the pandemic has resulted in an urgent need to incorporate health emergency disasters while designing hydro-meteorological disaster management plans.