

Risks of Exposures of World's Cities to Natural Hazards, Air Pollution and Climate Change

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Abstract:

Cities are engines for economic growth, yet they have caused many social and environmental problems. More importantly, there is paucity in research of their risks of exposures to natural disasters, air pollution and climate change. Using data from the 2011 Revision of the World Urbanization Prospects from the United Nations Population Division, Natural Disaster Hotspots from the World Bank and the Center for International Earth Science Information Network, air pollution database from World Bank and the World Health Organization, and the Global Agro-Ecological Zones developed by Food and Agriculture Organization of the United Nations and the International Institute for Applied Systems Analysis, this study presents risks of exposures of worlds' cities to six natural disasters (cyclones, floods, droughts, landslides, earthquakes, and volcanoes) for 633 cities with a population of 750,000 or more in 2011. The study also reviews changes in air quality in 63 worlds' largest cities with inhabitants of 5 million or more in 2011 and changes in temperature and precipitation. Our results find that most cities are exposure to areas with a relatively high risk of at least one natural disaster, mainly in Asia. Cities in Asia are most polluted and 18 cities worldwide had a worsening trend in air quality in the past decade. Our results further reveal that most cities, especially in Europe and Asia, had a rise in temperature in last forty years. While half of cities had a loss in precipitation, the other half had a gain in rainfalls in last forty years. Cities in Asia and Oceania had a loss in precipitation and cities in Europe and Africa had a gain. Implications of these results are discussed.

Keywords: City, Urbanization, Natural Hazards, Climate Change, Environmental Degradation, Population Growth, Sustainable Development

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