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CLIMATE CHANGE: Coastal Mega-Cities in for a Bumpy Ride

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NEW YORK, Mar 28 (IPS) - About 643 million people, or one-tenth of the world's population, who live in low lying coastal areas are at great risk of oceans-related impacts of climate change, according to a global research study to be released next month.

The study, by researchers at Columbia University's Centre for International Earth Sciences Information Network and the London-based International Institute for Environment and Development, is the first of its kind. The researchers identified populations, particularly urban populations, at greatest risk from rising sea levels and more intense storms due to climate change.

"Of the more than 180 countries with populations in the low-elevation coastal zone, 130 of them -- about 70 percent -- have their largest urban area extending into that zone," said Bridget Andersen, a research associate at CIESIN, in a statement.

"Furthermore, the world's largest cities -- those with more than five million residents -- have on average one-fifth of their population and one-sixth of their land area within this coastal zone."

The study, which will be published in the peer-reviewed journal Environment and Urbanisation, assesses the risks to populations and urban settlements along coastal areas that are less than 10 metres above sea level, referred to as the low-elevation coastal zone, or LECZ. Although globally this zone accounts for only two percent of the world's land area, it contains 10 percent of the world's population and 13 percent of the world's urban population, the study found.

The 10 countries with the largest number of people living in this vulnerable, low-elevation zone, include in descending order: China, India, Bangladesh, Vietnam, Indonesia, Japan, Egypt, the United States, Thailand and the Philippines.

Cities such as Dhaka, Shanghai and Mumbai are some of the most susceptible to coastal, climate-related hazards such as floods, storms and cyclones. And the rapid urbanisation occurring in these cities -- especially in China, which has growing special economic zones along its coasts -- will continue to attract more and more people.

"On average, coastal cities are growing 20 percent faster than any other cities in the world and they have 10-15 percent higher densities than other cities," Sharad Shankardass, spokesperson for the U.N.'s agency for human settlements, UN-Habitat, told IPS. "Of the 20 mega-cities in the world, 15 of them are coastal."

The study found that 75 percent of people living in the vulnerable low-elevation zone and two-thirds of the world's urban population are in Asia. In conjunction with the findings of the CIESIN-IIED study, 11 of the 15 coastal mega-cities listed by UN-Habitat in 2005 are in low-medium income countries. The study found that 14 percent of the population of least developed countries live in the LECZ, compared to only 10 percent in wealthier countries.

Twenty-one percent of the urban populations in least developed countries live in this zone. In richer countries belonging to the Organisation for Economic Cooperation and Development, this number drops to 11 percent. Human settlements in lower income countries with limited resources are, therefore, significantly more vulnerable to climate-related hazards.

"It is very clear in my mind that poor countries will have a disproportionate burden," Deborah Balk, a project investigator and co-author of the study, told IPS, "particularly those with large deltaic regions."

In fact, of the top 10 countries, Bangladesh, Egypt and Vietnam have a large proportion of their populations living within the LECZ: 46, 38 and 55 percent respectively. The Bahamas, the Netherlands, and Suriname have well over 70 percent of their populations living in the LECZ.

The study was partially funded by the Swedish International Development Corporation Agency and the Danish International Development Agency, both of which have programmes in urban environmental issues. Researchers overlaid geographic data, the

most recently available census data, and information on urban settlements, to produce maps showing the populations and land area in the LECZ for 244 countries. The information was then summarised by country, region and income category.

The study makes it clear that sea levels are not expected to rise anywhere near the 10 metres of the low-elevation zone. The fourth Intergovernmental Panel on Climate Change report estimated that sea levels are likely to rise in the range of 22-34 centimetres between 1990 and the 2080s. This level could be significantly higher with accelerated melting of the Greenland and polar ice sheets, the study noted.

Although small island states have the largest share of land in the low-elevation zone (16 percent), and would, therefore, be most likely to be affected by sea-related hazards, they tend to have less of their population living in the zone. Balk attributed this to the fact that people living on such islands are more adapted to coastal hazards and tend to live further inland.

"The study demonstrates how critical an issue this is from a global perspective -- it is certainly not just one for small island states," Gordon McGranahan, head of the human settlements group at IIED and co-author on the study, told IPS.

According to Tanya Imola, spokesperson for the international association of local governments, ICLEI, many cities have started implementing environmental programmes to address climate change and to curb their overall carbon footprint. Initiatives include improvements to public transportation, recycling programmes and energy efficiency. But only a few cities have started thinking about how to address the effects of sea level rise and other ocean-related hazards.

The authors of the CIESIN-IIED study categorise three types of responses to address these risks: migration, mitigation and modification. Both McGranahan and Balk agreed that these strategies have a long lead time.

UN-Habitat and the U.N. Environment Programme have initiated joint projects to address these issues, but UN-Habitat's Shankardass pointed out that "we are still in the early stages of establishing a realistic strategy for intervention and implementation for cities that will be directly affected by climate change."

Of utmost importance, McGranahan noted, is to start working with national and local authorities engaged in urban and

environmental issues, and for them to start making commitments to these types of strategies now.

"Ultimately, adaptation has to be negotiated locally, and so we want to combine this sort of global analysis with local engagement," he told IPS. (FIN/2007)

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