



Adapting to Sea-Level Rise

Action Points

- Define sea-level rise planning areas and map risks
- Clearly articulate issues in land use plan
- Engage those who are most vulnerable to sea-level rise in planning and policy making
- Invest in public awareness and emergency preparedness
- Apply green infrastructure and ecosystem solutions

Recognising the issue

Sea-level rise constitutes a direct threat to human lives, properties and infrastructures. Coastal cities are particularly exposed to multiple risks resulting from a combination of the effects of climate change and more frequent and intense tropical cyclones with all their consequences.

Based on different future climate change scenarios, science has presented a number of sea-level rise projections for South Asia and Southeast Asia. According to these projections sea-level rise along the coastlines of these regions are forecasted to be about 10-15 percent higher than the global mean by the end of the 21st century.

Analysing the drivers

Sea-level rise is a growing concern for coastal cities in Asia. Mounting pressure on vulnerable areas for housing development, outdated infrastructure to deal with storm water, a high number of informal settlements on marginal lands, as well as deforestation and degradation of natural storm water filtering functions are a few of the urban drivers, that – coupled with the gradual rise in sea levels due to climate change – pose serious challenges to urban development and to the safety of its citizens.

Understanding the consequences

surging global mean temperatures sea-surface temperatures will rise, leading to an increase of tropical cyclone-related rainfall by up to a third and more frequent storm surges, indicating a higher level of flood risk in low lying and coastal regions. In addition, the intensity of such events is projected to increase.

With mankind reshaping coastal areas and natural coastal erosion taking place, climate-induced sea-level rise opens a door to new vulnerabilities. Climate change will exacerbate existing coastal flooding and erosion problems in many locations. Flooding associated with rising sea levels will lead to an increased inundation of low-lying areas in coastal cities causing enormous losses in land and infrastructure, if not addressed. Consequences will include:

- loss of life and threat to the safety of citizens;
- damages to and loss of property and infrastructure affecting, for example, coastal communities and coastal tourism;
- high costs for coastal protection or costs for relocation;
- decreased groundwater availability and quality because of saline intrusion into aquifers;
- saltwater infiltration of infrastructure, for example into potable water supplies and wastewater treatment facilities; and
- changes to coastal ecosystems, potentially leading to coastal erosion and the interaction of storm-related effects with the shoreline.

The destruction of public and private infrastructures is extremely costly to local authorities who would need to reinvest. Moreover, by disrupting public services, including roads, schools, and many other activities, it also poses a threat to urban systems as a whole (e.g., transportation, local economy, food and distribution). Finally, by indiscriminately harming urban and natural areas, sea-level rise is also an ecological challenge that disturbs coastal biodiversity and natural landscapes.

AsianCitiesAdapt
Policy Pointer Series

No. 1 Tackling Urban Landslides
 No. 2 Responding to Urban Heat Island Effects
 No. 3 Addressing Urban Flooding
 No. 4 Adapting to Sea-Level Rise

The Policy Pointers shall provide local governments with basic insights into selected climate change impacts and present first options of preventing and adapting to them.



ICLEI South Asia

Taking action

Local authorities should take a pro-active approach to save human lives and avoid vast damages and costs. There are a number of actions that local authorities can initiate to mitigate the effects of sea-level rise and adapt to the impacts.

For the management of future coastal flood impacts, it may be necessary to create sea-level rise planning areas including mapping of risk areas to better address the issue. This needs to be clearly articulated in the land use plan as a formal policy. To carry out these activities local authorities should invest in capacity building to improve knowledge and technical know-how of its staff on climate change and its impacts by involving vulnerable sectors and groups in the planning and policy making processes.

Cities may gain new insights from informal local approaches already underway as many communities living with the risks of disasters and climate variability have already independently developed coping mechanisms. In a next step, local authorities should invest in public awareness and emergency preparedness.

Implementing green infrastructure and ecosystem planning, even outside the city limits, helps to protect the coastlines against storm surges. This can include mangrove reforestation and wetland restoration initiatives.

Further measures that could be considered are upgrading or construction of sea walls to meet new standards based on the expected future magnitude of storm surges.



For more information on the project and all other results see:

www.asian-cities-adapt.org

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AsianCitiesAdapt – Impacts of Climate Change in Target Cities in India and the Philippines and Local Adaptation Strategies (2010-2013) brings together science and policy in order to identify the impacts of climate change and develop local adaptation strategies in four cities each in India and the Philippines.

AsianCitiesAdapt is part of the International Climate Initiative. The Federal Ministry for the Environment, Nature Conservation and Nuclear Safety supports this initiative on the basis of a decision adopted by the German Bundestag.



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