

# Global Change and Human Activities in the Coastal Zone: Implications for Sustainable Development in Monsoon Asia

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Approximately, 40-60% of the global population live within 100km of the coasts. In many countries of the Monsoon Asia, the percentage is even higher, approaching 100 for most island nations and much of Indochina. For the sake of simplicity, the coastal zone is hereby defined as the region between 100 km landward from the coast and 200 m in water depth seaward of the coast. Coastal zones of the Monsoon Asia are unique because they are subject to the influence of monsoons. Monsoon rains sustain the lives of millions of people and nurture the local plants, animals, and freshwater biota. Too much rain, however, results in floods and mud flows. Conversely, failure of the monsoon rains often means droughts and spells disaster for humans and other biota alike.

In coastal regions, the documentable evidence of environmental change attributable to the explosive growth of human populations and their drive to alter their environment can be quantified in terms of reduced water quality; destruction and degradation of such critical habitats as estuaries, coastal wetlands, coral reefs, and beds of macrophytes; the collapse of stocks of important fish and shellfish; deforestation; land subsidence; seawater intrusion and erosion of topsoil; ocean acidification; and even the spread of the death zone. This threat will grow in the future as the population of coastal zones continues to increase rapidly.

Further, typhoons, storm surges, and tsunamis hit the coastal zones the hardest, often resulting in huge losses of human life, as evidenced recently in Taiwan and the Philippines. Long-term records lead to the conclusion that the sea level is rising, and major typhoons are stronger and occur more frequently because of warmer seawater.

Identifying and quantifying what was said above, and developing scenarios of change including anthropogenic and natural drivers for stakeholders requires capacity building, research, analysis, interpretation, networking, and synthesis that cross the interface between natural and socio-economic sciences. There is a clear need for mitigation measures, better management, and



enforceable regulations in order to achieve sustainable development of the coastal zone. And the greatest need for coastal management initiatives is in tropical countries, since it is here that the process of environmental change is most rapid, and it is here that the great majority of the increase in human population that is expected by 2040 will be concentrated. Controlled development of this area is therefore an urgent issue.