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Ocean Acidification: a New Concern for Marine Policy in Thailand

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Marine ecosystem responses to ocean acidification are very complex and require knowledge of impacted marine processes and trophic interactions. This paper emphasizes on a challenge of ocean acidification in Thai coral reefs and its implication for marine and coastal planning. It is recognized that the ecological impact of ocean acidification resulting from the anthropogenic emissions of carbon dioxide is a relatively new concern for scientists and managers however it is important to increase research effort. Our current scientific data show that ocean acidification can be a serious threat to the marine ecosystem, biodiversity, biogeochemical cycles and ecosystem services. Based on some important literatures on coral reef management with focusing on ocean acidification, especially from the International Coral Reef Initiative (ICRI) recommendation on acidification and coral reefs, the International Society for Reef Studies (ISRS): briefing paper 5-coral reef and ocean acidification, the Honolulu declaration on ocean acidification and reef management and the Monaco declaration, a variety of coral reef research aspects, including extremely basic data collection as well as sophisticated laboratory and modeling applications, are required. The research aspects include quantification of the spatial and temporal variations in coral reef carbonate budgets, studies of the impacts of reduced calcification on organisms and ecological processes and determination of the calcification mechanisms across various calcifying taxa. As limited research funding and man-power, an overarching need is to establish cross-disciplinary and cross-institutional collaborations that will minimize duplication of research and allow efficient research planning to cope with ocean acidification. Management strategies in Thailand should focus on reducing all stresses on coral reefs as much as possible to enhance their health and resilience, designing and management of marine protected area networks to address ocean acidification impacts, integrating coral reef management with land-use and coastal zone planning and practices to reduce pollutant inputs, developing a coordinated international network of monitoring stations to map the vulnerability of coastal areas to ocean acidification at scales relevant to managers, integrating acidification data into existing accessible data management systems, developing educational and informational materials to communicate the implications of ocean acidification for reef ecosystems and dependent communities emphasizing response actions, linking between economists and scientists that are needed to evaluate the socioeconomic extent of impacts and costs for action versus inaction and improving communication between policy makers and scientists. It is necessary to have mechanisms for implementation of projects and activities concerning ocean acidification as well as coral bleaching under the national coral reef management plan which should include establishing a coral reef committee for policy determination, support and evaluation of projects or activities concerning prevention and mitigation of coral reef degradation (under the National Environment Board) and providing regular reports on coral reef status and problems to the cabinet and asking them to command relevant government agencies about implementation of the proper projects.