



## **Facing Ocean Acidification in the Philippines: Emerging Governance and Management Responses**

P. Fernandez Jr. and R. Fernandez Subade

University of the Philippines Visayas Miagao, Iloilo, Philippines 5023 (sonny.fernandez@gmail.com and rodanasu@gmail.com)

Climate change affects ocean and coastal conditions. An awareness of the linkages therein can lead to a more comprehensive approach in ecosystem governance and management for sustainable development and food security. An awareness of ecosystem services and flows can also detect new policy problems such as ocean acidification (OA). Climate change is acidifying the ocean and coastal areas, which increases dissolved carbon dioxide and decreases ocean pH, carbonate ion concentration and calcium carbonate mineral saturation. Like climate change, OA impacts marine ecosystem starting at the lowest trophic level and will negatively impact food supplies and ocean health. This paper, using the Philippines as an illustration, argues that the following policy responses are in order:

1. Public awareness and research: Awareness and knowledge about OA is scant. Public awareness via diverse media, and multidisciplinary research efforts are in order.
2. Create international socio-scientific networks to help build site-specific, flexible, and adaptive communities and resilient ecosystems: Provide access to international networks of expertise, and provide financial assistance, to highly vulnerable and threatened politico-geographic areas that have coral reefs, as well as fishery and aquaculture operations.
3. Create new legislation or policies to integrate large ecoregions or ecosystems to existing governance and management systems: Strengthening of institutions and proper coordination among actors to balance production and conservation, as well as harvesting and restoration. Monitoring and impact assessments must be integrated into efforts.
4. Empower local communities: Addressing OA, like climate change, entails a global effort to reduce carbon emissions. But local communities can help governments in carbon sequestration through reforestation efforts. Reduction in local pressures may also buy time for the impacts of emission reductions and carbon sequestrations to occur.

Ocean acidification adds to the existing stressors facing Philippines ocean and coastal areas. All stakeholders and policymakers responsible for environmental and food security issues need to become more aware of forces that create or enhance vulnerabilities of socio-ecological systems to OA. Policies and initiatives that avoid or prevent risks need to be adopted to limit existing threats.