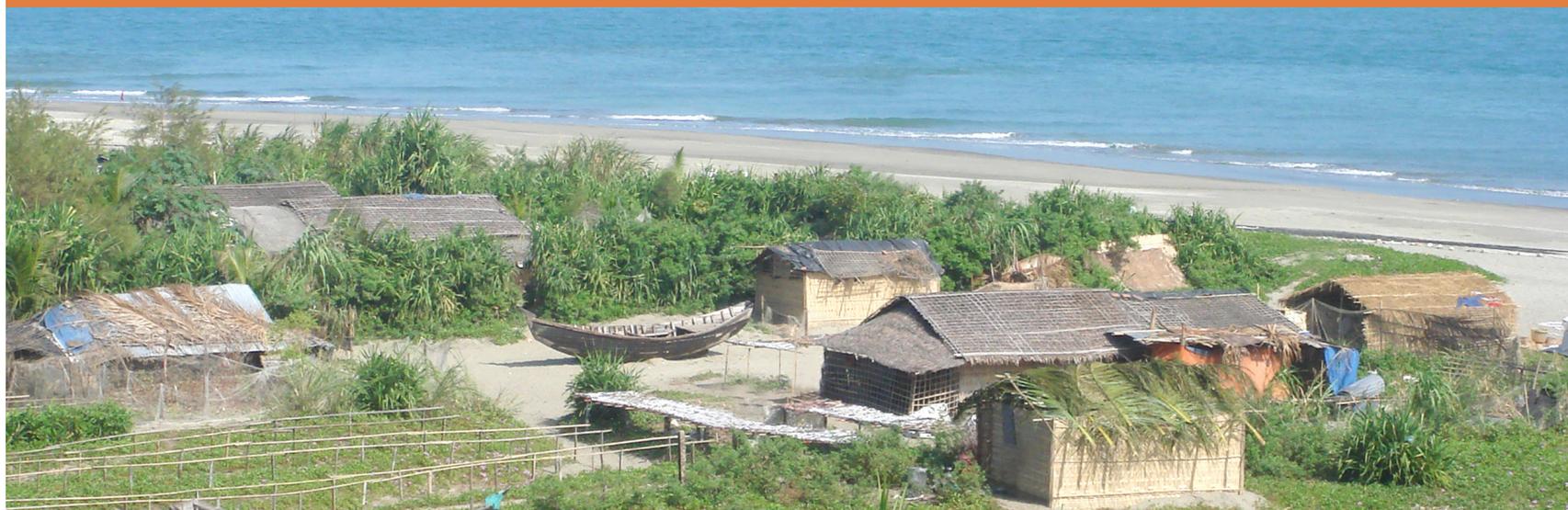


# INTEGRATED COASTAL ZONE MANAGEMENT

## LESSONS IN CAPACITY BUILDING & GOOD GOVERNANCE FOR COASTAL ADAPTATION



### KEY MESSAGES

- Coastal regions provide vital ecosystem goods and services; but are exposed to a multitude of stresses, including those from sea level rise and coastal inundation.
- There are synergistic advantages in integrating coastal management and coastal adaptation.
- Experiences with the Integrated Coastal Zone Management (ICZM) provide helpful insights for coastal adaptation.
- Good governance deficits limit the efficacy of the ICZM framework and coastal adaptation in many developing littoral states.
- Development of institutional and individual capacities for addressing the geophysical and socio-economic aspects of coastal vulnerability is key to promoting coastal resilience.

**HALF** of the world's population lives within 100 kilometers of a coastline. Coastal regions support the lives and livelihoods of millions, and about a billion people (largely in developing countries) rely on fish as their principal source of animal protein. Nonetheless, coastal areas continue to be subjected to a diversity of stresses, including unplanned and haphazard settlement patterns, environmental degradation, including severe levels of pollution, coastal inundation due to sea-level rise and increase in recurrence and intensity of cyclones and storm surges. Both the utility and vulnerability of coastal areas require that coastal environments be protected and sustainably managed. Integrated Coastal Zone Management (ICZM) provides a framework for sustainably managing the coast by supporting spatial and sectoral integration and coordination of activities in the coastal space.

This issue brief explores prevailing knowledge on the policy nexus between coastal management and coastal adaptation, with special emphasis on the ICZM framework in promoting the health of marine and coastal ecological systems.

## **WORSENING COASTAL VULNERABILITY UNDERPINS THE NEED FOR SMART ADAPTATION**

Coastal regions are highly vulnerable to natural hazards. The 2004 tsunami, which affected more than 11 countries around the Indian Ocean, with a death toll of over a quarter of a million people and billions of dollars in damage cost, illustrates this vulnerability.

The Fourth Assessment Report of the IPCC observed that coastal areas are expected to face increased sea level rise, coastal erosion and coastal flooding (Parry et al., 2007; Nicholls et al., 2007). These impacts pose daunting challenges especially for coastal states in developing countries where resource and capacity constraints limit the efficacy of disaster preparedness and response (see Bindoff et al., 2007; Nicholls et al., 2007; Kebede et al., 2010).

The fact that coastal ecological systems are both important and fragile underpins the need for developing robust and proactive coastal adaptation across scales of governance with the view to enhancing coastal resilience. To this end, existing experiences on coastal management broadly, and the ICZM framework in particular, offer an opportunity to explore the multitude of factors that worsen vulnerability of coastal ecosystems and communities to climatic risk and the means for addressing these sources of vulnerability.



Hurricane Sandy inflicts heavy damage in Haiti  
Source: UN

## **CCMAP SPDs FLAG THE IMPORT OF ICZM FRAMEWORK FOR COASTAL ADAPTATION**

ICZM was identified as a key approach for tackling coastal vulnerability, in science-policy dialogues facilitated by START under the Integrating Climate Change Mitigation and Adaptation into Development Planning (CCMAP) project - a collaborative project of START, WMO, UNEP, IPCC, the University of Ghana, the University of Dar es Salaam, and the Bangladesh Center for Advanced Studies. One of the thrusts of CCMAP is the identification, generation and use of sector and location specific climatic knowledge to inform resilient development. The following are examples of knowledge and capacity needs identified through CCMAP dialogues related to coastal areas:

- Need for developing or updating national ICZM Plan in light of the threats posed by sea level rise and salinity intrusion (Bangladesh, Tanzania, Senegal);
- Need for more multidisciplinary in coastal management (Nigeria);
- Need for further studies on carbon sequestration by corals as well as trends in calcification (Tanzania);
- Need for strengthening/ creating observation stations (Tanzania, Senegal); and
- Need to address issues related to weak adaptive capacity and lack of good governance (Nigeria, Senegal).

## **WHAT IS ICZM AND HOW IS IT RELEVANT TO ADAPTATION?**

ICZM is a framework encompassing a multidisciplinary and iterative process for sustainable management of marine, coastal and terrestrial components of coastal regions in littoral states (see EC, 2000). It seeks to balance competing socio-cultural and economic goals and objectives with the imperatives of conservation of coastal

assets and the coastal environment. ICZM tools and methods include integrated management, sectoral coordination, land use planning, watershed management, zoning of resource areas, natural reserves, buffer zones, setbacks, adaptive and community based management and public participation (see Clark, 1997). Operationalizing ICZM requires government laws and regulations informed by environmental impact assessments and strategic environmental assessments.

ICZM has important commonalities with coastal adaptation in that both target sectoral and spatial integration and coordination of coastal institutions, processes and activities. Much like ICZM, adaptation is an iterative process of responding to climatic impacts and stimuli. Both advocate for integration of all scales of governance, the need for participatory decision-making as well as the need for ecosystem-based and flexible governance (see Falaleeva et al., 2011).

Whereas the policy community has only recently started to view climate change impacts on coastal areas as a serious challenge, policy for sustainable management of the coastal space is by no means novel. For example, ICZM is traceable to the 1992

UNCED's Agenda 21 (Chapter 17) and there is at least three-decades worth of experience with ICZM related frameworks. Interrogation of such experience could thus help shed light on the suitability of ICZM and similar frameworks for adaptation planning. While it is difficult to make generalizations about ICZM<sup>1</sup>, national scale experiences provide helpful insights on the import of institutional capacity and good governance as preconditions for sustainable management of coastal regions.

### THE CASE FOR POLICY INTEGRATION IN COASTAL MANAGEMENT AND ADAPTATION

While there is an urgent need to address coastal vulnerability and build resilience in coastal ecosystems and communities, *“coastal adaptation solely in response to climate change is not possible given the financial, infrastructural, and political constraints”* (Cheong, 2011). In fact, combining strategies for coastal adaptation may actually be more sensible as a pathway for adaptation than one specific strategy such as, for example, ICZM (see Rosenzweig et al., 2011; Cheong, 2011).

#### IN FOCUS: GHANA SCIENCE-POLICY DIALOGUE

The coast has a special value for Ghanaians. Four of the country's six major cities are located along the coast, and coastal fisheries contribute much to the national GDP and animal protein intake. Furthermore, coastal wetlands in Ghana contain several endemic species - 11 water birds, 3 turtle species and 6 mangrove species. However, Ghana's 530 km coastline is extremely vulnerable to climate change impacts, including sea-level rise and coastal erosion.

START facilitated a National Science-Policy Dialogue in Accra, Ghana in October 2009, under the CCMAP project. The following knowledge / capacity needs were stressed with regard to coastal adaptation: -

- Consider the interplay of compound vulnerability factors (e.g. degradation of coastal wetlands, pesticide misuse, inappropriate siting of settlements, invasive species, pollution etc.);
- Promote science-based adaptation decision making;
- Scale-up scientific research to tackle data gaps;
- Create/strengthen observation networks;
- Develop an ICZM framework; and
- Improve coastal governance.

<sup>1</sup> While ICZM is generally a good framework for coastal management, the desirability and feasibility of a combined ICZM – coastal adaptation strategy in developing countries has not been fully examined. Besides, given current understanding of the temporal and spatial scales of the drivers, pressures, and state of coastal environments, ICZM frameworks have a much smaller scope (see Cheong, 2010; Mee, 2012).

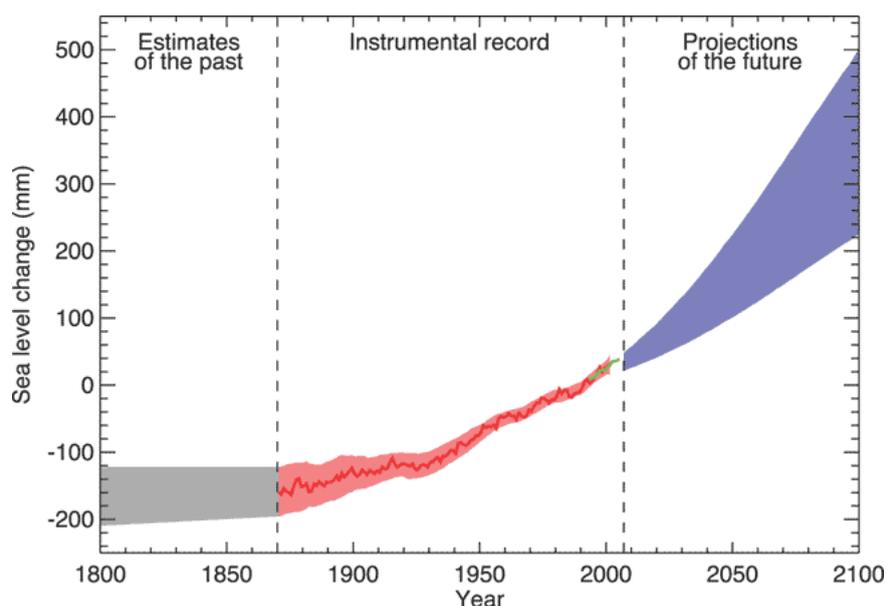


Fig. 1: Evolution of global mean sea level in the past and as projected for the 21st century under the IPCC Special Report on Emission Scenarios (SRES) A1B scenario. Source: IPCC

The importance of an integrated approach to coastal governance can also be explained by the potential for impacts of the “dangerous combination of climate change, natural hazards, resource depletion, poverty, and coastal population growth” (Godschalk, 2009; see Biermann et al., 2007; Rypdal et al., 2009; Tabara, 2009; Urwin, 2008). The overlapping nature of coastal management and coastal adaptation insinuates that an integrated approach for both is prudent (see Aalst et al., 2008; Falaleeva et al., 2011).

### **DEFICITS IN GOOD GOVERNANCE COULD BE A BARRIER TO SOUND COASTAL ADAPTATION**

Governance deficits are roadblocks to proper implementation of ICZM - experience in developing countries shows that the usefulness of ICZM frameworks could be curtailed by virtue of weak governance (see Ibrahim et al., 2012). Attributes of good governance (such as non-existent/deficient processes of integration and coordination of sectors and stakeholders as well as weak public participation and access to information) are widely deficient in many developing countries and this severely limits the efficacy of their ICZM plans (see Falaleeva et al., 2011, Ibrahim et al., 2012; Barale et al.,

2010). Certain forms of governance are particularly antithetical to the principles inherent in ICZM frameworks. Exploring the impact of authoritarian rule on success of ICZMs, Tabet et al., (2012) note that “developing nations with reduced governance capacities due to socio-political and economic conditions, may not be able to implement ICZM, let alone sustain donor initiatives once funding has been dispersed” (see Sorensen, 2002). Dealing with coastal vulnerability and resilience and successful application of the various tools and methods (including ICZM) that are useful for this effort will require strenuous effort at improving governance – this could prove critical for successful and sustained coastal adaptation.

### **OPPORTUNITIES FOR ENHANCING COASTAL RESILIENCE THROUGH CAPACITY DEVELOPMENT**

Despite their appeal, capacity deficits limit the utility of ICZMs in many developing countries (see Christie, 2005; Martinez et al., 2011; Ibrahim et al., 2012).

Capacity development is itself a pathway towards building resilience - by strengthening institutional

and individual capacities on both the geophysical and socio-economic aspects of coastal vulnerability across scales of governance, a significant headway could be made towards building resilience in coastal regions.

*Building human capital:* Coastal areas are the foci for dynamic interactions among multiple phenomena, processes and activities. Hence, their management is complex. Climate change adds another layer of complexity. There is, therefore, an acute need to build the capacities of coastal managers and decision makers, with emphasis on enhancing their understanding of the drivers, and stressors, of global environmental change, including climate change and the implications thereof to local coastal ecosystems and communities. Enhancing research capacity of academics in coastal vulnerability and impact assessment is also essential. Relatedly, there is a need to also scale up the reach of capacity building efforts in ICZM and related frameworks, perhaps maximizing use of web-based capacity building in coastal management (see Krelling et al., 2008).

*Strengthening institutions:* Capacity building in coastal management that is limited to imparting

technical knowledge and procedures to coastal managers has the unintended effect of accentuating sectoral approaches, as opposed to holistic approach, which would be more in tune with the ICZM framework. Because integration is key to ICZM, building national capabilities for coordination and administrative integration (e.g. development of coastal legal frameworks, coastal agencies, conducting SEAs etc.) is vital (see Gonzalez-Riancho et al., 2009). Strong coastal institutional frameworks would also bode well for adaptive efforts.

*Technological support:* Technology is key to sustainable coastal development and adaptation. For example, GIS based tools could help support the development of sustainable policies, taking into account the risks associated to future climate change projections (Rizzi et al 2012). Likewise, climate modelling is also useful in providing location-specific data on anticipated changes and impacts on coastal environments. There is a need, therefore, to develop local capacities in GIS based tools; in generation, analysis and application of local/regional climate models as well as other pertinent technology.



Building a sea wall in Kiribati  
Source: World Bank

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