Policy Brief
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Achieving Sustainable Development Targets in a Changing Climate: How Can ICM Help?

Photo: Raymundo Agaton Jr.

The East Asian Seas Congress 2009
and the
3rd Ministerial Forum

Are the impacts of climate change in coastal areas, including flooding, increasingly frequent typhoons and tropical storms, storm surges and sea level rise likely to hinder your country's ability to meet social, economic and environmental goals? Does your country have a clear strategy and action programme for mainstreaming climate change adaptation measures into the development agenda? Are current approaches to poverty alleviation, food security, environmental degradation and alternative livelihoods achieving expectations?

Through the development and implementation of an integrated management approach to marine and coastal area and resource management, 28 local governments in 11 countries across the East Asian Seas region (**Figure 1**) are progressing towards their respective sustainable development objectives. Building on the knowledge, skills and lessons learned from these local initiatives, a national policy that promotes and facilitates strengthening and scaling up of integrated coastal management (ICM) among concerned national agencies, sub-national authorities/local governments and other stakeholders can be an effective strategy for bridging the divide between sustainable development targets and the challenges of climate change mitigation and adaptation.

ICM provides national and local governments, civil society, the scientific community, and the private sector with a common management framework and systematic process for planning, developing and implementing strategies, programmes, investments and services that respond to the needs and expectations of coastal communities and contribute to the development of a sustainable marine and coastal economy.

ICM can be a useful tool for addressing specific development challenges and optimizing responses to climate change at the local level. ICM is not just about environmental management. Sectors other than environment have a stake too. As competition increases for limited resources in marine and coastal areas and the surrounding watersheds, along with other pressures coming from growing coastal populations, pollution discharges, biodiversity degradation and loss, overexploitation of freshwater supplies and climate change, policymakers in other sectors need to take an active interest in how decisions are made with regard to coastal development, as well as how their own decision-making impacts on the sustainable development of marine and coastal areas.

To stimulate the adoption of a more strategic and sustainable approach to protection of oceans and coastal areas and the rational use and development of their living resources, the 1992 UN Conference on Environment and Development (UNCED) called for countries (i.e., in Agenda 21 and the Rio Declaration of Principles) "*…to commit themselves to integrated management and sustainable development of coastal areas and the marine environment under their jurisdiction….*" This call was reiterated during the 2002 World Summit on Sustainable Development (WSSD) and in other global agreements, including the United Nations Framework Convention on Climate Change, the Convention on Biological Diversity, the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities, the Barbados Programme of Action for the Sustainable Development of Small Island States, the UN Millennium Development Goals as amended in 2005, and the Bali Plan of Action of the OPEC Ocean-Related Ministerial Meeting. In the Manado Ocean Declaration, adopted by the World Ocean Conference in May 2009, ICM was identified as a valuable tool in achieving sustainable development and in pursuing climate change adaptation.

One may ask, "Why is ICM being referred to as an instrument of sustainable ocean and coastal development in so many international agreements and Plans of Action?"

GEF
Global Environment Facility

UNDP
United Nations Development Programme

UNOPS
United Nations Office for Project Services

PEMSEA
Partnerships in Environmental Management for the Seas of East Asia

Box 1: Forecast impacts of climate change in Asia

The IPCC (2007) has documented with very high confidence, or high confidence, statements of the expected impacts of climate change on key sectors, such as agriculture, ecosystems, water, coasts, health, industry and settlements. The magnitude and timing of impacts that will ultimately be realized will vary with the amount and rate of climate change, emission scenarios, development pathways and adaptation, but some of the examples of projected impacts in Asia included:

By 2050s:

- Freshwater availability is projected to decrease in Central, South, East and Southeast Asia, particularly in large river systems;
- Coastal areas, especially heavily populated mega-delta regions in South, East and Southeast Asia, will be at greatest risk due to increased flooding from the sea and, in some areas, from the rivers;
- Major population centers at low elevations, including Mumbai, Shanghai, Jakarta, Tokyo, and Dhaka will be particularly vulnerable to the effects of climate change;
- Climate change is expected to compound the existing pressures on natural resources and the environment, which are associated with rapid urbanization, industrialization and economic development;
- Due to projected changes in the hydrologic cycle, endemic morbidity and mortality due to diarrheal disease associated with floods and droughts are expected to rise in East, South and Southeast Asia.

The Case for ICM

Applying ICM for developing and managing marine and coastal areas and resources can advance parallel goals such as reducing poverty, increasing food security, fostering economic growth and protecting ecosystems. It can also more effectively tackle specific issues related to climate change, such as controlling flooding, mitigating the effects of storm surges and sea-level rise, strengthening disaster preparedness and response mechanisms, and improving the resiliency of communities and marine and coastal ecosystems.

How does ICM do this? Essentially by using an ecosystem-based management approach, recognizing that ICM is not actually management of components of the ecosystem, but rather the management of human activities and their impacts on the ecosystem.

Figure 1. PEMSEA ICM Demonstration and Parallel Sites

Finding the Balance

Looking at a particular problem or resource within a narrowly defined framework makes decision-making a lot simpler but, in some cases, at the expense of efficiency and sustainability, social equity, and plain common sense. The fact is that coastal and marine resources are already integrated resources, whether we choose to acknowledge it in our governance structures or not. Upland land use decisions impact on downstream water quality and availability, which in turn affect marine and coastal ecosystem integrity. Port development and shipping can affect, and can be affected by coastal fisheries or aquaculture, and so on. These are but two of the many examples of the interconnectivity between marine and coastal ecosystems and human activities on land and sea. Given the numerous and complex links between activities that influence and are influenced by the development

Box 2: What is ICM?

ICM evolved from the practical need to plan and manage the various economic activities that occur in the coastal area, regulate human behavior, coordinate policy and management intervention, and integrate the use of coastal waters into land-use planning. The ultimate purpose of ICM is, therefore, to increase the efficiency and effectiveness of coastal governance in terms of its ability to achieve the sustainable use of coastal resources and of the services generated by the ecosystems in coastal areas. It aims to do this by protecting the functional integrity of these natural resource systems while allowing economic development to proceed (Chua, 2006).

Why is ICM considered an essential tool for achieving sustainable development goals and objectives?

ICM is considered as an "operational definition of sustainable development", as evidenced by how the present ICM practice mirrors the hierarchy of sustainable development principles. ICM, as applied, consists of:

1. **Broad-based approaches** that support sustainable development, such as integration and coordination, ecosystem-based management, environmental protection and sustainable use of natural resources, sustainable livelihoods and vulnerability/resiliency strengthening.

2. **Operational strategies** that create an effective governance framework, including: policy and institutional reforms, multistakeholder participation, functional partnerships and networking, capacity development, information and knowledge management, financing arrangements, coastal strategy development and implementation, and monitoring and evaluation.

3. **Operational tools** that provide specific best practices, including: coastal profiling, stakeholder analysis, governance review and coordinating arrangements, risk assessment, land- and sea-use planning, legal/regulatory instruments (e.g., land- and sea-use zoning; marine protected areas), participatory tools (e.g., negotiation, conflict resolution and arbitration), training and education, economic instruments (e.g., polluter pays; environmental user fees), and disaster preparedness/response covering manmade (e.g., oil spills) and natural hazards (e.g., storm surges).

What are the principles that set ICM apart from other management frameworks?

Three principles form the foundation of ICM practice and set it apart from other coastal management frameworks. These are:

1. **Adaptive management** is based on the premise that information and knowledge about resource systems and how to manage them are largely uncertain. This principle is a purpose- and outcome-driven iterative process of planning, implementing, assessing, modifying and/or re-doing. The principle emphasizes that one must be ready to make appropriate administrative or management adaptations in response to unforeseeable forces, such as ecological uncertainties and changing political and management conditions that hamper the ICM initiative.

2. **Integration and coordination** are to ensure that: a) policies and management actions of relevant sectors within the ICM programme are consistent with one another; b) policy and management reforms to facilitate policy and functional integration are based on sound scientific advice; and c) various intersectoral activities are closely coordinated and streamlined towards eventual scaling up of management practices.

3. **Ecosystem-based management** is focused on maintaining the integrity of ecosystems, which provide goods and services essential for human well-being. The principle maintains that effective ecosystem management means managing human interaction with the environment.

and management of marine and coastal areas, a more coherent and integrated approach makes good sense.

The trick is to find the balance between a fully integrated approach that risks getting mired in complexity, and an approach in which each sector pursues its own narrowly-defined interests without looking at the larger impacts and opportunities. In practice, striking this balance means that policymakers need to give marine and coastal issues an appropriate place on the national agenda; they need to be more "climate sensitive' when it comes to economic policy and policy in marine and coastal related sectors, and they need to create more effective channels for communication and shared decision-making among government agencies, levels of government, organizations, interest groups, coastal communities and the private sector.

Solving Problems through ICM

Practical experience in the application of ICM in the East Asian region over the past 15 years has led to the development of a common framework for sustainable

Box 3. National economies and climate change

Climate change is real and it is happening now! If not addressed adequately, it could seriously affect the region's growing marine economy, by exacerbating inundation, storm surge, erosion and other coastal hazards, thus threatening vital coastal infrastructure, settlements and facilities.

A recent initiative of PEMSEA presented preliminary findings on the contribution of the marine economy to the national economies of the region. Indications are that the contributions are in excess of 5 percent and may reach 20 percent in two preliminary estimates. The data on employment also show the role of the marine economy in supporting jobs in the East Asian Seas region. PR China has 4.15 percent of total employment in the ocean economy, whereas Australia and New Zealand have less than 2.5 and 1 percent. The difference is explained as a consequence of the excellent coastlines and rich marine ecosystems, providing distinctive economic advantage in trade, fishery production and tourism, among others (Tropical Coasts. July 2009).

Economic modeling carried out under a recent ADB study confirmed that Southeast Asia is more vulnerable to climate change than the world as a whole. Without further mitigation or adaptation, the four countries included in the study – Indonesia, Philippines, Thailand and Viet Nam – were projected to suffer a mean loss of 2.2 percent of GDP by 2100 on an annual basis, if market impact (mainly agriculture and coastal zones) were considered. This is well above the world's 0.6 percent. The mean impact could be dramatically worse, equivalent to 5.7 percent of GDP each year by 2100, if non-market impact (mainly related to health and ecosystem) was included and 6.7 percent if the chance of catastrophic events was also considered. Again, these are higher than the world's 2.2 percent and 2.6 percent respectively (ADB. April 2009).

development of coastal areas (**Figure 2**). This common framework covers a system of governance as well as several issue-specific management systems critical to achieving the overall goals of sustainable development, including climate change adaptation. The ICM framework has become a very useful guide for national and local governments to promote sustainable development initiatives and programs. Key areas of competence addressed in the governance component of the framework include:

1. **Policy, strategies and action plans:** establishing and adopting policy reforms, shared visions and missions, long-term strategies and actions plans that express intention, direction, targets and timeframe for managing marine and coastal resources and their sustainable use through an integrated approach.

2. **Institutional arrangements:** operationalizing interagency and multi-sectoral coordinating mechanisms that involve concerned stakeholders in planning, implementing, evaluating and continually improving programs for sustainable development through ICM applications.

3. **Legislation:** developing and implementing national legislation and/or local administrative orders, which support new and existing policies that facilitate the effective implementation of ICM, including, for example, interagency and multi-sectoral institutional arrangements, land and sea-use zoning schemes, registration and licensing systems, market-based/ revenue generating instruments covering access and use of resources, monitoring and reporting, information sharing, and surveillance and enforcement mechanisms.

4. **Public awareness and information management:** putting into operation communication strategies and plans for ensuring that stakeholders are informed of the scope, benefits and threats to their local ecosystems, and the programs that are being developed and implemented to reduce threats and enhance benefits.

5. **Sustainable financing:** institutionalizing the measures and means to support conservation of resources and required environmental infrastructure improvements through public- and market-based sources.

6. **Capacity development:** incorporating capacity development as an indispensable component of all aspects of sustainable development programs, from inception and implementation to monitoring and evaluation and, in particular, equipping local personnel and managers with the essential technical and management skills to plan and manage coastal areas and resources.

But governance alone cannot achieve the goals of sustainable development. It must be accompanied by on-the-ground actions, which integrate policy and functional procedures across (and oftentimes within) sectors into an operating management system. In addition, an important cross-cutting element of the management system is the role of science. Specifically, the focus is the input by the scientific community at the local, national and regional levels on the state of the environment, the scientific basis and rationale for management decisions, and the scientific assessment of management interventions and their ultimate contribution to the adopted sustainable development targets and objectives.

Furthermore, on-the ground actions imply implementation of projects or programs that address the fundamental threats to the continuous supply of public goods and services generated by the ecosystems, which in turn affect the lives, health and property of the coastal inhabitants. Obviously, each country, local government unit, or stakeholder will have a perspective on what constitutes a threat to sustainable development. The framework (**Figure 2**) identifies five essential aspects of sustainable development of coastal and marine areas and their corresponding management regimes, which represent one or more priorities of local governments depending on environmental conditions within their respective areas of jurisdiction, as follows:

1. **Natural and man-made disaster prevention and response management:** While many countries have their own disaster management strategies and response systems, most are coordinated at the national level. While coordination with the national authority is deemed necessary, ICM is intended to prepare local government and its stakeholders to respond to man-made and natural disasters. A first step in the process is to identify and delineate the likelihood of a disaster occurring, the potential risks (social, economic and environmental), the likely consequences, and the ultimate impact on the lives and properties of coastal inhabitants as well as ecosystem health.

2. **Natural coastal habitat protection, rehabilitation and management:** Specific habitat management programs, including increasing the vegetation coverage in urban centers, are developed and implemented to provide adequate protection, conservation and restoration of natural environmental assets such as coral reefs, mangroves, seagrass beds, and other wetlands. For example, land and sea use zoning schemes help local governments regulate use of these areas, based on functional characteristics, traditional practices, existing national and local laws, and the level of development.

3. **Water use and supply management:** Forward-looking water resource management programs are essential to sustainable development, especially in urban centers where water supply shortages are anticipated. Measures include sound water use policy, tariff systems, water allocation/licensing, water conservation and reuse, protection of water sources (i.e., watershed or river basins; surface and ground water), and ensuring the quality, adequate supply and accessibility of water services to common citizens.

4. **Pollution reduction and waste management:** Sustainable management programs entail an understanding of the sources and characteristics of contaminants and waste materials entering the

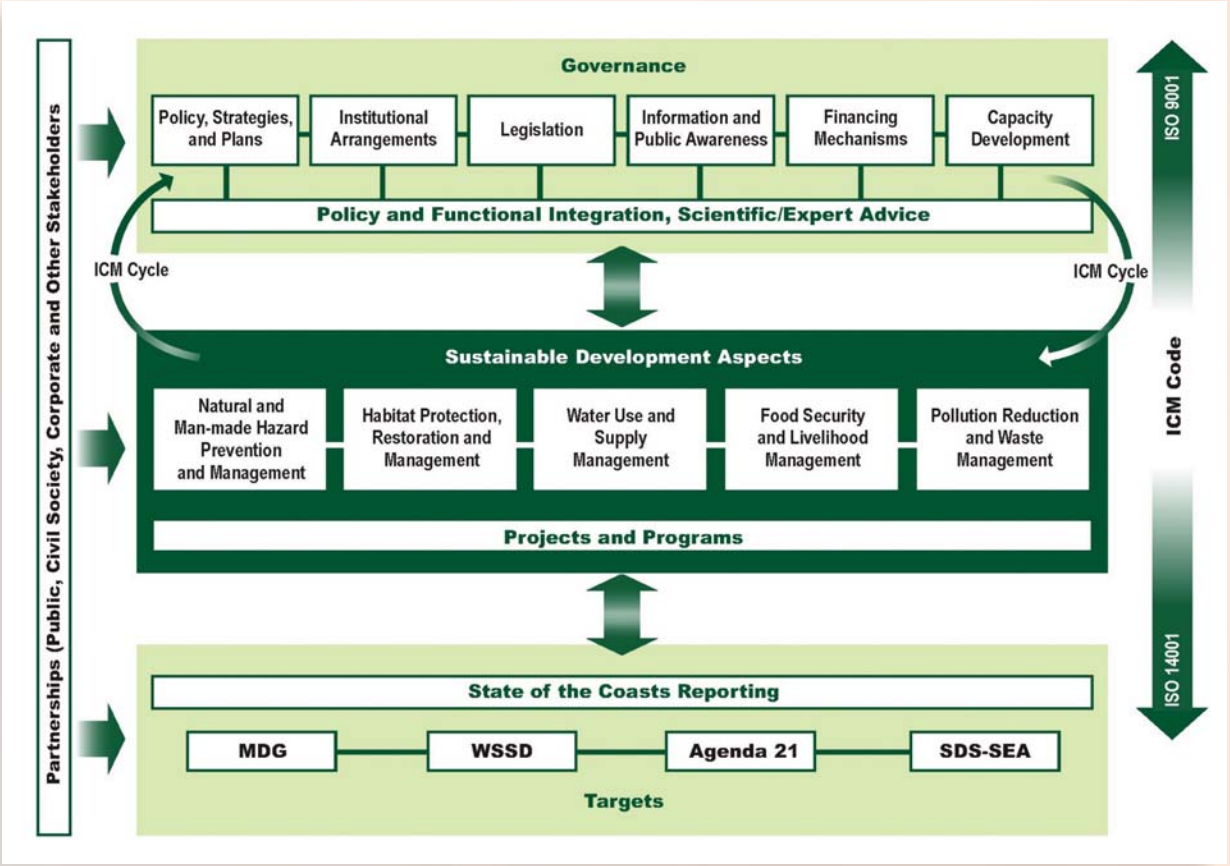

Figure 2. Framework for Sustainable Development of Coastal Areas through ICM.

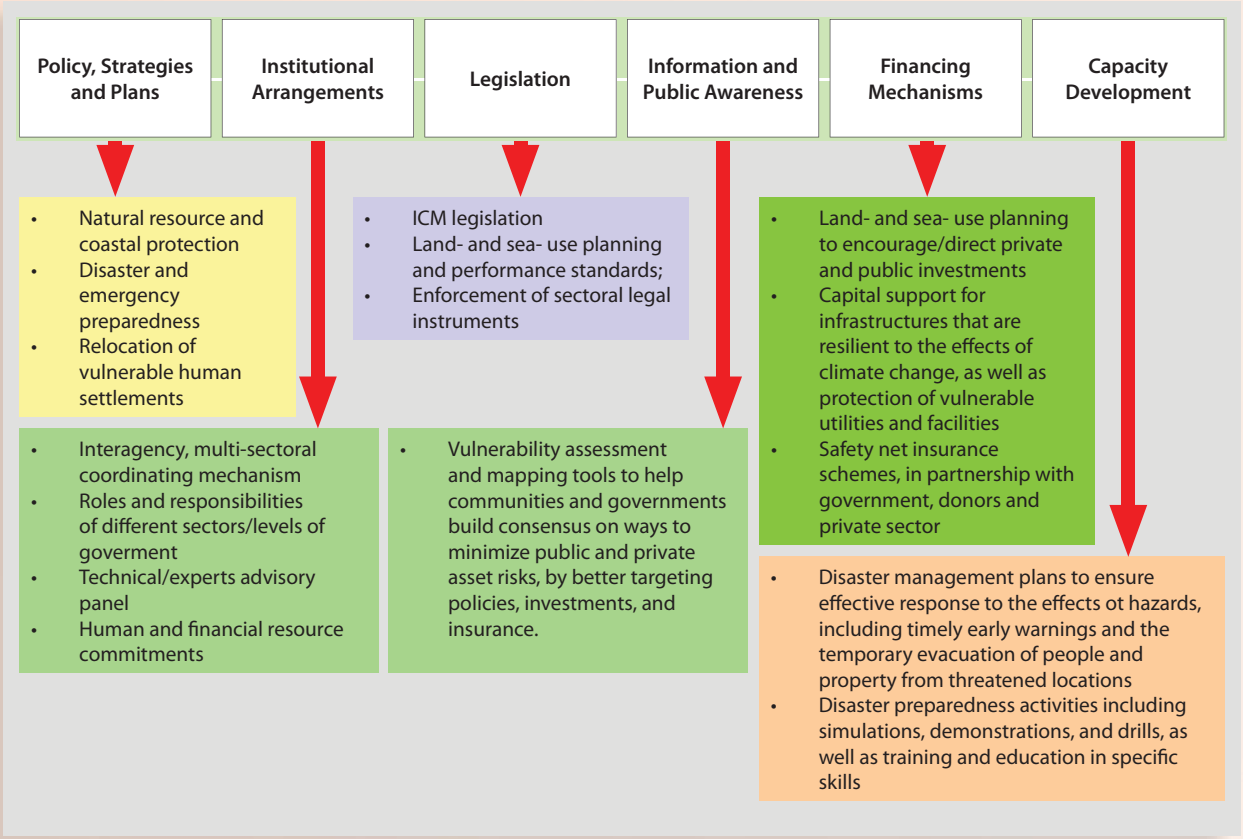

Figure 3. Good Governance: Some Key Considerations for Climate Change Adaptation Measures through ICM.

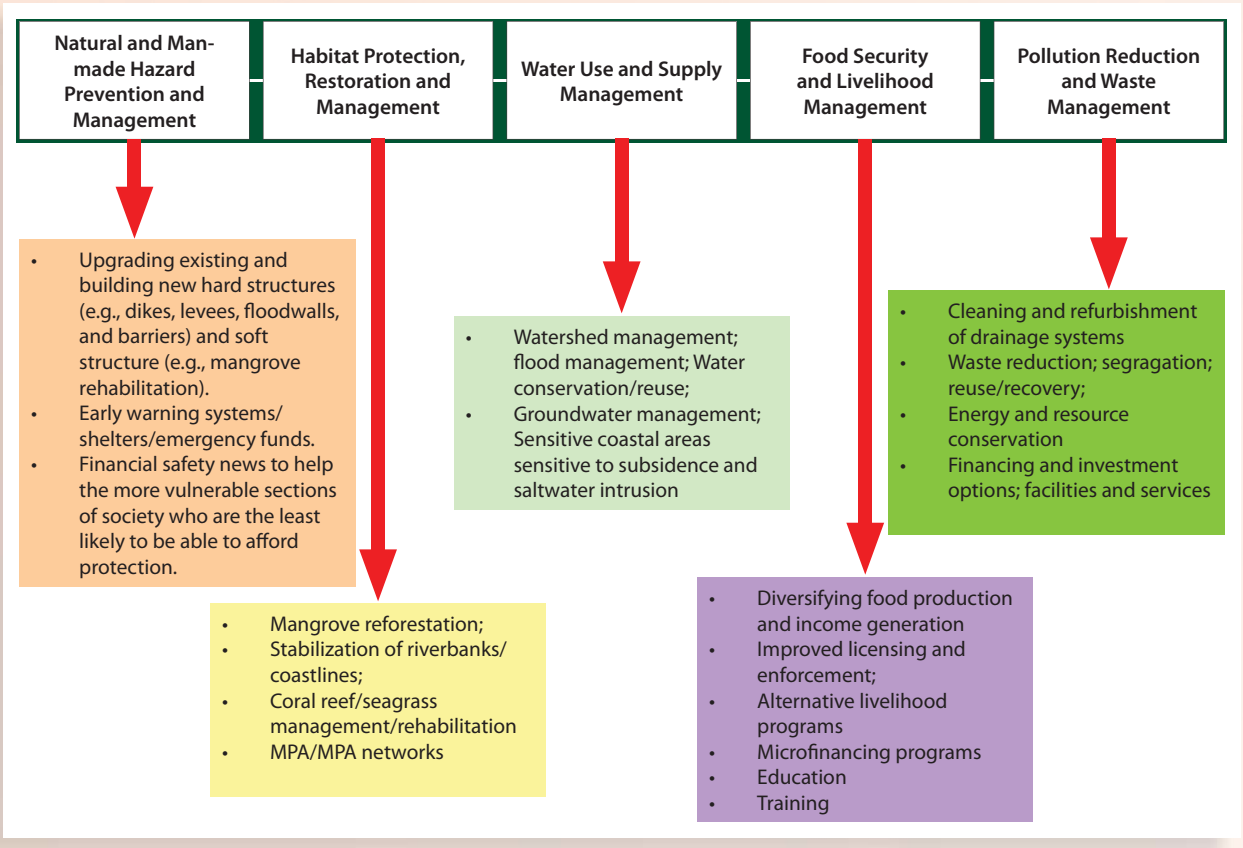

Figure 4. Sustainable Development Aspects encompassing Climate Change Adaptation Measures through ICM.

environment, required societal behavioral shifts to reduce or eliminate pollution, and the introduction of policy reforms, legislation, capacity development, market-based procurement and management instruments, awareness building, and incentive and enforcement mechanisms to promote change.

5. **Food security and livelihood management:** The sustainable supply of fisheries, especially from river systems and coastal seas is both a target and an outcome of sustainable development. The fishing sector itself requires management and, in particular, the implementation of the FAO Code of Conduct for Responsible Fisheries is central to achieving this. But all other aspects of sustainable coastal and marine areas affect fisheries, and therefore a sustainable supply of fisheries can also be an outcome of good management of these other issues. It is also important to ensure the accessibility of the poor to fisheries, given its role as a major traditional source of animal protein for the coastal poor. Alternative livelihood programs for coastal communities can also be set in place to reduce overfishing and increase income from other sources of living.

ICM and Climate Change Adaptation

ICM provides local governments with a systematic process and the fundamental tools that will bridge the divide between sustainable development and climate change. The potential synergies between "sustainable development and climate change adaptation through ICM" are well apparent, in terms of the principles, strategies and tools (**Box 2**), and the governance and management aspects that comprise the ICM framework (**Figure 2**). **Figures 3 and 4** provide several examples of how ICM can be utilized by local governments to:

- set up coordinating mechanisms across agencies and sectors;
- mobilize community and stakeholder participation;
- build awareness and capacities to assess the vulnerability of coastal areas, improve the resiliency of coastal communities and marine and coastal resources to the hazards of climate change, and set and operationalize effective disaster risk reduction and management measures;
- facilitate the development of socially sensitive insurance schemes that serve as a safety net for households and businesses, as well as a deterrent for inappropriate development in high risk, highly vulnerable areas; and
- apply soft- and hard-engineering solutions to reduce the impact of climate related hazards (e.g., floods; droughts; storm surges) while improving environmental services and socio-economic benefits to coastal communities.

The ICM development and implementation process (otherwise referred to as the ICM Cycle) that has been developed, implemented, evaluated and refined by PEMSEA over the past 15 years through practical experience serves as a step-wise procedural and interative approach to identifying and prioritizing environmental concerns, and for planning, approving, implementing

Figure 5. ICM Development and Implementation Process (ICM Cycle).

Box 4: Who's responsible?

The crux of the matter is that a functional partnership between national and local governments contributes immensely to the success of an ICM programme. As partners, each has specific roles and responsibilities within in their respective mandates, areas of jurisdiction and competence.

Local governments are at the forefront of challenges and problems on-the-ground. Since they are often at the frontline of operations, they are more aware of the issues, wants, needs and preferences of the stakeholders at the local level. Local governments are therefore in the best position to integrate ICM into local development and environmental plans. However, there are constraints. Lack of expertise and financial resources are common reasons why local governments hesitate to engage in an ICM program. Lack of awareness about ICM, shortage of information, and vested economic interests are other common constraints.

The role of the national government in ICM entails putting in place the necessary policy, coordinating mechanisms, legislation, awareness building and capacity development programs and financial assistance to support and incentivize ICM implementation at the local level. National governments have greater access to funding and expertise than local governments. Therefore, they are better equipped to extend technical and financial support to the ICM programs of the local governments.

The national government is also in a strategic position to establish national ocean and coastal policies, which can mainstream ICM into development plans and programmes at the sub-regional, national and local levels.

and monitoring cost-effective policy and management interventions.

The six basic stages in the ICM cycle are: 1) preparation; 2) initiation; 3) development; 4) adoption; 5) implementation; and 6) refinement and consolidation.

These processes follow a cycle that promotes and facilitates evaluation and continual improvement of the ICM programme over time as the local government builds its capacity and understanding.

The Way Forward

PEMSEA Country Partners have adopted a target to implement ICM programmes in at least 20 percent of the region's coastline and adopt ocean and coastal policies in at least 70 percent of the countries by 2015 (Haikou Partnership Agreement, 2006). The ongoing planning and development processes for scaling up ICM from the current 28 local government sites to the 20 percent regional coastal target, as well as the continuing development and adoption of ocean and coastal policy among countries of the region, provide a solid foundation for this engagement. These initiatives need to be nurtured and encouraged to full implementation.

Complementary assistance is needed not just to strengthen the implementation of ICM for sustainable development, but also to ensure that local government planners, resource managers and other stakeholders are equipped and helped to use these new ICM tools and approaches for addressing climate change issues and adaptation measures.

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