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### **Protecting Malaysia's Marine Biodiversity for Future Generations: Issues, Challenges and The Way Forward**

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*International Day for Biological Diversity (IDB) was celebrated on 22 May 2012 with the theme Marine Biodiversity. The IDB provides Parties to the Convention on Biological Diversity (CBD) and other interested stakeholders an opportunity to raise awareness of the issues and increase practical actions towards protecting and promoting biodiversity. This article describes the status of marine biodiversity conservation, achievements, and major challenges involved in safeguarding Malaysia's marine ecosystems and environment.*

The focus on oceans and coastal zones has steadily increased in the recent past due to global warming, the greater awareness of the role of oceans in climate regulation, and increased direct impacts by human activities that threaten the sustainability of ecosystem services from local to global scales; all of which makes marine biodiversity conservation ever so crucial. May 22<sup>nd</sup>

marked the International Day for Biological Diversity (IDB) as a special occasion to reflect on the role of biodiversity in our lives. For 2012, the theme for IDB is 'Marine Biodiversity'.

The field of biodiversity is so broad that virtually any environmental study can be related to some aspect of biodiversity. The Convention on Biological Diversity (CBD) for instance defines biodiversity as the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within and between species, and of ecosystems. The protection of marine ecosystems is crucial to human well-being. As part of the Jakarta Mandate on coastal and marine biodiversity, the CBD is committed to a series of specific goals that will, among others, develop, enhance, and implement wide-ranging integrated coastal and marine management measures which include a broad suite of measures at all levels of society.

Another interesting aspect of the convention includes the agreement achieved at the tenth meeting of the Conference of the Parties to the CBD in Nagoya, Japan in 2010 where governments agreed to a Strategic Plan for Biodiversity for the 2011-2020 period (as short-term goals) and up to 2050 (the long-term goal). This plan and its Aichi Biodiversity Targets generally include specific objectives to be achieved with regard to coastal and marine areas globally. Among the areas mentioned include sustainable harvesting of fish, invertebrates and aquatic plants, as well as the establishment of greater level of protection for ecologically sensitive areas with relevant importance for biodiversity conservation and the provision for ecosystem services. It further emphasised that by 2015, the multiple anthropogenic pressures on coral reefs and other ecosystems that are impacted by climate change or ocean acidification are to be minimised. The failure in achieving the 2010 Biodiversity Targets points to the fact that they might be too ambitious; nevertheless, these are necessary as threats are increasingly prevalent. It is envisaged that the longer actions are delayed, the more difficult it would become for solutions to be implemented.

Malaysia signed the CBD in June 1992 with ratification in June 1994, and is thereby committed to conservation and sustainable use of coastal and marine biodiversity and natural resources. Since ratification of the CBD, biodiversity considerations have been streamlined into the various policies, strategies and action plans i.e., the 5-year Malaysia Plans, the National Policy on Biological Diversity 1998, National Policy on the Environment 2002, National Wetlands Policy 2004, National Physical Plan 2005, and National Urbanisation Plan 2006. The conservation of natural resources and biological diversity are implemented through various sectoral laws and regulations e.g., the Protection of Wildlife Act 1972, Environmental Quality Act 1974, National Forestry Act 1984, and Fisheries Act 1985, to name a few.

Additionally, safeguarding ecosystems is an important element for coastal and marine biodiversity conservation. For instance, the Department of Marine Park Malaysia (DPMP)

manages about 235,723 ha of marine protected areas (MPAs) in Peninsular Malaysia and federal territories, representing a wide range of habitats including coral reefs, seagrasses and mangrove forests. In Sabah, MPAs covering 57,533 ha of area are managed by the Sabah Parks; whereas in Sarawak, MPA areas covering 206,344 ha are managed by the Sarawak Forestry Department. These efforts and many more, have enabled Malaysia to be ranked 26<sup>th</sup> out of 149 countries for efforts in the management of biodiversity and environment under the 2008 Environmental Performance Index led by Yale and Columbia Universities. In addition, in conjunction with the International Day for Biological Diversity 2012 the Ministry of Natural Resources and Environment declared a target of 50 marine parks to be established in the country by 2020 (from the current 42) in a bid to conserve more marine life.

### **Threats to marine biodiversity**

Despite the long-standing connection to and benefits derived from coastal and marine biodiversity, it has not always fared well at human hands. Most of the biodiversity conservation issues identified decades ago have not been resolved, and many are actually worsening with growing impacts of emerging threats such as climate change. Human activities are attributed as the major threats that have dramatically accelerated the global rate of species extinction, affecting the ability of the natural environment to deliver goods and services. For instance, the Food and Agricultural Organisation (FAO) in 2010 estimated that about 80 percent of the world marine fish stocks are fully exploited or overexploited. Anthropogenic threats to biodiversity can be summarised into five major areas: (i) overexploitation of fisheries resources, (ii) alteration of physical environment/habitat damage, (iii) pollution, (iv) introduction of alien species, and (v) climate change. These threats could typically act in synergy and produce changes in biodiversity that might be more pervasive than those caused by single disturbances.

The threats associated with coastal and marine biodiversity in Malaysia could be categorised into: (i) *Threats to ecosystems*: land development, pollution, encroachment, climate change, and invasive alien species introduction; (ii) *Threats to species*: poaching and collection, and invasive alien species introduction; and (iii) *Indirect threat*: climate change. These cause the loss and degradation of habitats such as coral reefs and mangroves, as well as a degradation in ecosystem benefits which indirectly affects the attractiveness of tourism destinations, the fisheries sector, or aquaculture, to name a few.

### **Challenges at hand**

The loss of habitats and extinctions will continue if current trends of marine biodiversity loss persist. This therefore demands for more effective actions. It is widely acknowledged that substantial resources have been placed into policy development in the form of negotiations, adoption and revision of decisions, work programmes and guidelines at the CBD level. There are

however, areas that need to be addressed further in delivering tangible results on marine biodiversity conservation on the ground. For instance, more data and information is needed to address impacts of climate change on the coastal areas in Malaysia, formulate climate change adaptation measures for the coastal areas in the country, ascertain the actual impact of ocean acidification on ecosystems, and address the subject matter on invasive alien species introduction in Malaysian waters.

The failure to achieve the *2010 Biodiversity Target* is one example illustrating its continued challenge for many states, especially developing countries, to convert international aspirations into effective actions at the national level. Perhaps one of the biggest reasons for this is the inadequacy in integrating of biodiversity concerns into sectoral policies and programmes (i.e., agriculture, forestry, fisheries, shipping, and tourism) for national level implementation. Perhaps it would also be feasible to conduct studies on understanding further the economic aspects of conserving biodiversity by states, mainly as a persuasive measure to stress on the economic ramifications of biodiversity preservation to policy makers.

There is also a need to review national biodiversity strategies and action plans vis-a-vis marine biodiversity protection and conservation, with a view to make it more relevant to current realities and threats to marine biodiversity. Most of these documents might not have been revised since they were drafted more than ten years ago. This is crucial as the *Post-2010 Biodiversity Target* emphasises on the need to integrate the newly adopted Strategic Plan under these plans. It is important that national goals and measurable targets be established in tandem. One example would be for countries to develop national plans of action for marine biodiversity conservation at local level supported by specific management strategies and objectives (i.e., in the day-to-day management of established MPAs and gauging its effectiveness). On the contrary, many parks would only exist as ‘paper parks’ without an effective management scheme in place.

In many cases, it is envisaged that it would be difficult to reverse the current degradation within the timescale of a human life. Actions taken must thus be underpinned by programmes aimed at developing an increased awareness of the issues amongst the general population. In this case, enforcing existing laws, drafting new ones and reviewing current policies towards marine biodiversity conservation at local levels although not considered as ground-breaking initiatives, are however fundamental steps which could effect a ‘quantum leap’ in marine biodiversity conservation at national levels. These are much needed given the pressure on the ecosystems and habitats, species and resources. Efforts must also be tailored towards moving marine biodiversity management at local levels away from the current ‘business-as-usual’ approach. The primary ingredient missing from national programmes in turn rests on widespread ignorance of the severity of the issues amongst the general community in all nations.

It is important to also acknowledge that protection of biodiversity is largely a complex issue as it often involves transboundary effects. It is therefore practical to build networks of cooperation at the regional level (especially with neighbouring countries) in promoting capacity building, exchange of data, and carrying out enforcement and surveillance activities. This should not just be among governments, but should also encompass collaboration among private sectors and business entities. Management efforts such as the Coral Triangle Initiative (CTI), other large marine ecosystem programmes i.e., the Sulu-Sulawesi Marine Ecoregion (SSME) and country-

level ecosystem-based management programmes provide rich examples from which to develop lessons.

### **Areas in the local scene that need attention the most: The way forward**

The government emphasises a pro-active approach to biodiversity conservation. The growing impacts of emerging threats to biodiversity i.e., climate change, however, presents a greater challenge that requires concerted efforts to address the issues and challenges faced more effectively. Based on the consultative project on National Capacity Needs Self-Assessment for Global Environmental Management (NCSA) commissioned by the Ministry of Natural Resources and Environment in 2007, among the major areas that have been identified include the policy and institutional framework, regulations and guidelines, federal and state cooperation, inter-agency coordination, knowledge and information management, incentives, requirement for more experts, research and development, reporting mechanism and mainstreaming. Some of the major actions required for biodiversity conservation efforts in Malaysia include:

- (i) Reviewing the implementation of the National Policy on Biological Diversity as it has been more than 10 years since its launch.
- (ii) To fine-tune and harmonise gaps and overlaps in existing laws and regulations on biodiversity conservation.
- (iii) Establishing active platforms at states levels on implementing the National Policy on Biological Diversity. Present State Action Councils' focus may not be solely on biodiversity.
- (iv) Filling in the gaps in terms of application of economic instruments for biodiversity conservation.
- (v) Establishing a comprehensive monitoring mechanism for the implementation of the National Policy on Biological Diversity.
- (vi) Strengthening the MPA network in Malaysia.
- (vii) Marine biodiversity conservation is not as advanced compared to terrestrial ecosystems with the Department of Marine Park and the Department of Fisheries carrying out the conservation of marine biodiversity. The integration with other related agencies should be further enhanced.
- (viii) Combining new and old approaches to enhance knowledge of biodiversity and enlarge the spectrum of applications that can be targeted. For instance, there is room for pioneer investigations to test new concepts and approaches introduced under the CBD i.e., EBM and adaptive management for instance, and identify limits to implementation capacities.