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### **Maritime Security and Environmental Concerns: Regional Implications**

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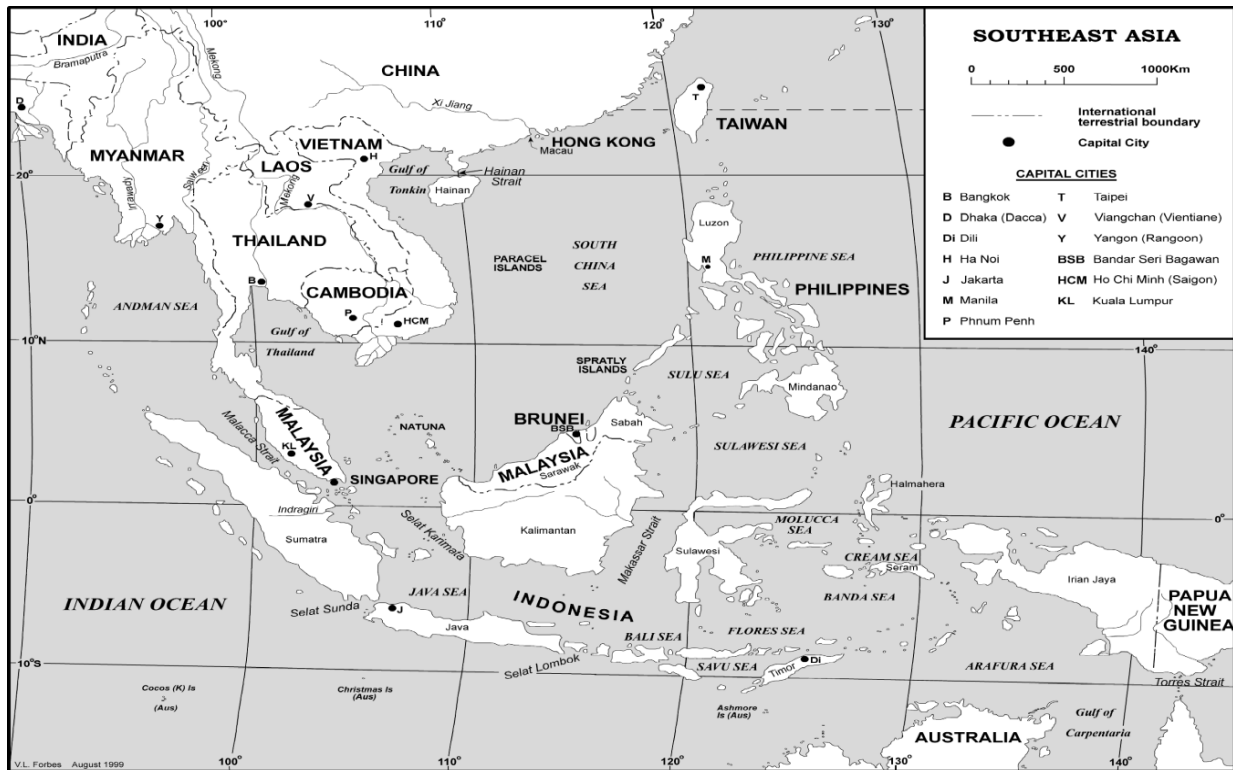
#### **Introduction**

Southeast Asia is a maritime region bordered by important sea areas and large marine ecosystems including the Straits of Malacca and Singapore, South China Sea, the Gulf of Thailand, the Sulu Sea and the Sulawesi Sea (Figure 1). These seas provide four categories of services offered by coastal and marine ecosystems as identified in the 2005 Millennium Ecosystem Assessment. These are the provision of food, medicines, construction materials; regulating the impact of the environment for coastal protection and the maintenance of water quality; cultural services such as aesthetics, spiritual values and sites for tourism; and support services for the maintenance of basic life support systems. The statistics are staggering to say the least. In 2000, it was estimated that the coastal regions of the South China Sea were host to 270 million people, most of whom are dependent on the South China Sea for nutrition and socio-economic well-being (Talaue-McManus 2001). In 2007, almost seven million tonnes of fish were landed from the South China Sea amounting to almost ten percent of world fish production (FAO

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2012). Yet, despite its value, marine and coastal ecosystems worldwide and in Southeast Asia are being threatened and diminished by human activities and natural phenomena.

The significance of environmental security as a whole cannot be understated. Principle 25 of the Rio Declaration, for example, mentions specifically that “Peace, development and environmental protection are interdependent and indivisible.” Principle 24 of the same document goes further in noting that: “Warfare is inherently destructive of sustainable development. States shall therefore respect international law providing protection for the environment in times of armed conflict and cooperate in its future development, as necessary (United Nations 1993)”. In his seminal paper Homer-Dixon identified threats to environmental security as the decreased quality and quantity of renewable resources through human activities causing degradation or natural phenomena such as climate change or extreme weather events (supply-induced scarcity); increased population growth or per capita consumption increasing the demand for basic environmental services and competition over resources (demand induced scarcity); and increasing inequality in access to resources leading to unequal disbursement of economic benefits from resource exploitation (Homer-Dixon 1994).



**Figure 1. Southeast Asian Seas**

### **Key Marine Environment Security Issues in Southeast Asia**

Marine environment security issues in Southeast Asia are multi-tiered and complex. Site specific, national, regional, global and transboundary issues vary from one regional sea to another. For example in the Straits of Malacca and Singapore international shipping is an important factor in environmental management whereas in the Sulu Sea and Sulawesi seas the challenges are more localised and related to livelihood issues and the use of destructive fishing methods. Notwithstanding the myriad issues involved, within the Southeast Asian context and with experience from the South China Sea and Gulf of Thailand, the main problems are loss and degradation of ecosystems and habitats, decline in biological diversity specifically endangered species, over-exploitation of fisheries resource, marine pollution and climate change.

### *Ecosystems degradation and loss*

Ecosystems and biodiversity degradation are localised issues with regional and global implications. Coastal and marine ecosystems and habitats such as mangroves, seagrass beds, and coral reefs are critical breeding and nursing ground for commercially important species and for sustenance fishing. However, despite national and regional initiatives many countries in the region continue to suffer from the loss and degradation of these ecosystems and habitats as a result of human activities and to a certain extent phenomena such as climate change.

Threats to South China Sea coral reefs for example are manifold and include anthropogenic causes such as the use of destructive fishing methods, over-fishing, pollution (mainly eutrophication) and sedimentation. Indirect or human induced causes of these threats are unsustainable practices in the fisheries sector, coastal development, deforestation and unsustainable tourism. Coral bleaching as a result of temperature rise and ocean acidification is considered a serious threat to coral reefs (Burke, et al 2011). Besides coral reefs, mangroves throughout the region are also threatened by human activities which include among others pond aquaculture, particularly for shrimp, clear-felling of timber for woodchip production, land clearance for urban and port development and human settlements, and harvest of timber products for domestic use (UNEP 2008). There are also secondary sources of mangrove destruction such as pollution and charcoal making.

Many countries in Southeast Asia share ecosystems and habitats which transcend national borders such as the seagrass beds between Vietnam and Cambodia and turtle nesting sites between Malaysia and the Philippines. The protection of vital seagrass areas in the provinces of Gin Jiang and Kampot is an example of bilateral cooperation between Vietnam and Cambodia in the face of a common environmental security issue namely habitat degradation (UNEP 2008) while the transboundary Turtle Islands Heritage Protected Area (TIHPA) between Malaysia and the Philippines has contributed towards the protection of turtle nesting sites in the two countries (ASEAN Centre for Biodiversity, 2010).

Mangroves like coral reefs and seagrass beds are important for regional fisheries and coastal protection. The degradation and loss of these ecosystems and habitats could have severe repercussions of a regional fisheries industry already beset by problems of overfishing.

### *Decline in fisheries resources*

Fisheries resources are important sources of nutrition and export revenue to Southeast Asian countries. The United Nations Environment Programme estimated that on average the fisheries sector contributed more than two percent to national Gross Domestic product (GDP) of most countries in the region. Annually, fish caught in the South China Sea and Gulf of Thailand amount to ten percent of global fisheries production (UNEP, 2008). Despite its significance coastal and offshore fisheries stocks in the region are in decline. In many parts of Southeast Asia this decline are contributed by many factors, such as over-exploitation of resources by excessive number of fishermen, the use of illegal and unregulated fishing methods, the destruction of coastal and marine habitat, and pollution. In parts of the region such as in the Sulu Sea, over fishing by local communities, known as Malthusian overfishing (Teh & Sumaila, 2007), the use of destructive fishing techniques such as cyanide fishing and fish bombing and the potential impact of climate change could combine to create a ‘triple-whammy’ effect on vulnerable coral reef ecosystems and the livelihood of coastal communities in the area.

Commercial or offshore fisheries on the other hand suffer from overcapacity and overcapitalisation of fishing fleets, a global problem no doubt but which is exacerbated by an absence of regional fisheries management mechanism, illegal, unreported and unregulated (IUU fishing), an input-based rather than a resource-based management (UNEP, 2008) and to a certain extent disputes over fishing grounds. The management of fisheries in the region therefore is difficult and “must balance the interests of multiple jurisdictions, coastal community dependence on fisheries for food security, in the face of problems resulting from over-fishing, destructive fishing practices, incidental capture of endangered species, and the inherently complex nature of the tropical multi-species fisheries (UNEP, 2008)”.

It could be argued that the fishing industry is both the cause and victim of ongoing territorial disputes in the South China Sea. On the one hand competition over increasingly scarce fisheries resources in resource rich areas such as the Scarborough Shoal has intensified conflict among South China Sea claimants, in this instance China and the Philippines. On the other, fishing vessels and fishermen are regularly arrested by enforcement agencies from the various claimant countries for fishing in disputed areas.

### *Climate change*

Climate change and its implications could potentially alter the region's marine environment. Sea level rise, increase in sea temperature and ocean acidification will affect ecosystems productivity especially that of coral reefs and as a consequence regional fisheries. A decline in regional fish stocks could adversely affect the supply of seafood to countries like Malaysia which has one of the highest annual per capita fish consumption in the region at 51 kilogramme per person (Department of Fisheries Malaysia, 2014). Additionally, low lying mangrove areas could be inundated. The Intergovernmental Panel on Climate Change estimated that a one metre sea level rise could lead to the loss of 2,500 square kilometers of mangroves in Southeast Asia. The World Bank reported that coastal cities in Vietnam, the Philippines, and Thailand could be inundated due to "extreme flooding and sea level rise" (2013) raising the spectre of "climate change refugees" in some countries that could in turn result in competition over land and water resources. While the full impact of climate change has yet to be fully understood, a study conducted by the Asian Development Bank (ADB) showed that climate change could result in loss of agricultural production and reduce combined regional GDP growth by 6.5 per cent annually (ADB 2009).

In addition to its environmental, ecological, social, and economic impact, climate change especially sea level rise could also have an unintended but destabilising impact on maritime boundary delimitation in Southeast Asia. The loss of low lying areas as well as small islands, rocks and offshore features may mean that countries would have to revise their maritime boundaries. This could result in future conflicts in already disputed areas such as the South China Sea.

## **A Note on Regional Cooperation**

Recognising the challenges to marine environment protection Southeast Asian countries have embarked on many cooperative activities regionally and with cooperation from intergovernmental bodies, non-government organisations and other countries. ASEAN for example has worked with the US, Canada, and Australia on various aspects of marine and coastal environment protection. Organisations such as the Coordinating Body on the Seas of East Asia and PEMSEA have also contributed to regional cooperation to protect the region's marine environment. The most recent initiative towards this is the Coral Triangle Initiative formed in 2007 which aims to address immediate threats to the region's coastal and marine resources specifically on coral reefs, fisheries, and food security.

Notwithstanding the success stories, there are real barriers to cooperation in marine environment protection in Southeast Asia. These include a lack of a common vision and agreement on such protection for the regional seas, unresolved maritime claims, absence of a comprehensive assessment of the state of the regional seas, and the unwillingness to commit to a regional agreement to protect a common sea area such as the South China Sea (UNEP 2008). Notwithstanding the situation, there are examples of success stories at the bilateral level as mentioned earlier, at the sub-regional level in ensuring safety of navigation and marine environment protection in the Straits of Malacca, and the ongoing workshop series on Managing Potential Conflict in the South China Sea in which marine environment protection is one of its focal areas.

## **Maritime Security and Environmental Concerns in Southeast Asia**

In the final analysis Southeast Asia faces real and emerging challenges in protecting its marine environment and addressing maritime security issues as well regional concerns arising from issues such as loss and degradation of ecosystems, decline in fisheries resources and climate change. The relationship between environmental concerns and maritime security in the region has yet to be fully studied but there is a cause-and-effect relationship or a nexus between the two especially in relation to the management and competition over fisheries resources and the impact of climate change of maritime boundary delimitation. However, this is at best or at worst an

indirect relationship and is unlikely to significantly undermine regional maritime security, and indeed, cooperation in marine environment protection has been mentioned in documents such as the 2002 ASEAN-China Declaration on the Conduct of Parties on the South China Sea as a possible means to manage the ongoing regional conflict and has provided opportunities for the conflicting parties to address issues of common concern. The process however is complex and sometimes fraught with difficulties. However despite success stories barriers to cooperation remain and would have to be addressed for the region to move further in this area.

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