

STATUS AND EVOLUTION OF CORAL REEFS IN CAMBODIA

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■ INTRODUCTION

Cambodia is located between latitudes 10° and 15° north, and longitudes 102° and 108° east, forming part of southwest portion of the Indochina's peninsula. It is situated within Southeast Asia, and covers an area of 181,035 Km². Its 435 Km long coastline lies within the Gulf of Thailand, with a total of two coastal provinces and two coastal municipal cities, namely the provinces of Koh Kong and Kampot, and the municipal cities of Sihanouk Ville and Kep.

Within a marine area of 55,600 Km², there are a total of 64 islands and a reef area covering 28,065 Km². Koh Sdach and Koh Rong are spectacular archipelagos of the southwest coast of Cambodia with a total of 16 islands of tropical forest surrounded by ancient corals. These archipelagos are also home to species of fish, crustacean, and Hump-backed dolphin. Because of Koh Sdach and Koh Rong's unique biodiversity and the intense fishing pressure threatening to destroy it, the Department of Fisheries (DoF) and several non-government organization (NGO) have joined forced in an effort to protect it. The Technical Working Group, including DoF, FAO, DFID, WildAid and National University of Singapore (NUS) have participated in a planning process to design a marine sanctuary management system that will effectively protect the fragile ecosystem of Koh Sdach and Koh Rong archipelagos.

Throughout the Koh Sdach and Koh Rong archipelagos, and the coastline from Sihanouk Ville to Koh Kong province, the drastic reduction in small fish and the shrinking of coral reefs are of great concern. Illegal fishing is causing major destruction of the marine fauna and flora with complete lack of coastal protection at this time.

■ ARTIFICIAL REEFS (ARS)

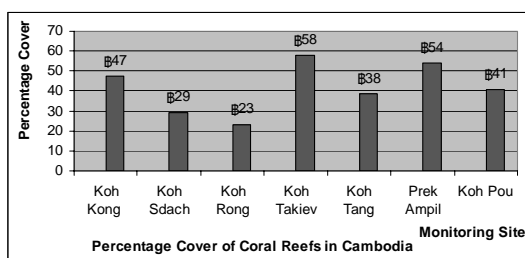
Artificial reef program were initiated in Cambodia in 1991, 1997 and 2002 using concrete modules and base/log of trees. In 1991, 300 units of concrete were deployed, and in 1997, 700 units of base/log of trees were used with a further 100 units deployed in 2002. These were deployed at depths less than 10m into fish sanctuaries in the Great Lake Tonle Sap (inland water) and were aimed to provide habitats and improve fish stock. In the past there was less concern about artificial reefs in marine waters. Traditionally, fishermen use tree branches, bushes or/and water hyacinth to make a brush park or bundles to attract and collect fish and shrimp. These fishing methods provide habitat, improve fish stock and also constitute a type of ARs.

■ MARINE PROTECTED AREAS (MPAS)

MPAs were established in 2002, implemented by DoF and funded by ICRAND project under the United Nation Environment Program in Koh Rong archipelago of Sihanouk Ville. Their focus is on the protection and management of the sea for spawning, feeding and nursing grounds for marine living resources to ensure their long-term viability and to maintain genetic diversity. Management are includes promoting compliance with MPAs regulations by increasing income for local fishers through enhancement of local fisheries, training of alternative livelihood, and promotion of eco-tourism, to protect coral reef and other diversity within the MPAs.

In recent years, DoF was interested in promoting coastal and marine fisheries management. What is required is long-term collaboration with donors to help conduct

natural resource assessments. Information on the extent and present health of coastal and marine ecosystems such as coral reefs and mangroves is needed to provide the basis for the formulation of development of marine fisheries management policies. To utilize the natural resources for the promotion of coastal and marine fisheries management for over the long term, proper management and continued monitoring of the resources are essential. The assessments will provide the information that is necessary for the development plans.



Benthos Cover

The Technical Working Group, including DoF, FAO, DFID, WildAid and NUS have participated in a planning process to design a marine sanctuary management system in Koh Sdach and Koh Rong archipelagos. The project aim is to assure effective protection. This translates into measurable objectives:

- 1) Regenerate coral
- 2) Reduce non indigenous species and their relative impact on coral and other marine biodiversity
- 3) Reduce illegal fishing (dynamite, cyanide and mosquito netting fishing)
- 4) Local communities effectively develop sustainable fisheries and produce sufficient food supply
- 5) Restore the small fish population

The main element related to marine fisheries/coral reef is:

- Start up with national policy and plan of action for coral reef monitoring and sustainable use of the reef ecosystem
- To determine the general distribution of coral reefs within archipelagos, and to conduct baseline quantitative

surveys to determine the abundance and distribution of the coral reef benthos and reefs fish and invertebrates

- To determine the general condition of the coral reefs in terms of visible impact
- To identify areas with good coral reefs for possible management and conservation efforts in view of the interest to develop the area for coastal tourism.
- To make aware and understood the significance of coral reef ecosystem among all stakeholders at all levels
- To understand coral reef biodiversity, and to get reliable assessment of changes in reef health
- Provide job opportunities and improve livelihood of the people in rural communities
- To improve the access to and distribution of fisheries benefits including export earns
- To extend the institutional responsibilities of fisheries management to the fishing communities
- To improve the protection of fisheries resources in sanctuary way; and
- To encourage the integration of fisheries resource management with rural development in fishing communities. (Nowadays, DoF, local communities and authority are now working together to manage fisheries resources in the coastal of Cambodia).

Strengthen role in conservation and management of fisheries resources:

- DoF have drafted and submitted a Royal Decree on Protection of Coral Reefs in Koh Sdach and Koh Rong archipelagos to the ministry of Agriculture Forestry and Fisheries and the Council Ministry.
- DoF have drafted and submitted the new Fisheries Law to the Council Ministry under support of APIP

(Agriculture Productivity Improvement Program) by World Bank project. However, the Fisheries Law No. 33 passed in 1987 is still in the enforcement that defines fisheries and categorizes fishing areas. It states that all entities or persons who fish in either freshwater or seawater must contribute to the state, except fishing for household subsistence. Fisheries exploitation and aquaculture in fishing areas are permitted but must be determined by regulation of the government of Cambodia. The Fisheries Law aims at being sustainable of exploitation of fisheries resources which include permission addressing access control, gear restrictions, closed season and the designation of fishing sanctuaries and also support to the management of fisheries coastal resources and coastal environment as well as all type of inland water. The management and administration of coastal fisheries is mentioned in Fisheries Law as the following:

1) Fishery resources are comprised of living animals and plants found in the fisheries domain (Chapter 1, Article 1). Marine fisheries domain extends from the coastline to the outer boundary of the exclusive economic zone (EEZ). Fisheries domain is property of the state.

2) Fishery exploitation, aquaculture and processing in Cambodia's marine fisheries are allowed upon government permission except for small scale family fishing, small scale family fishing gear and other fishing gear permitted in the marine fisheries of Cambodia must be defined by the proclamation of the Ministry of Agriculture. However, this law was not directly mentioned about the coral reefs and seagrass management within marine water (Chapter 3, Article 22).

3) Commercial fishing group or enterprise must obtain the following additional license: a fishing boat or vessels license allowing them to operate in the sea which is to be issued by the fisheries authority after technical control, and a license from the police for administration control (Chapter 3, Article 23).

4) The fishing activities of foreigners in Cambodia's marine fisheries domain must have approval from the Council Ministry (Chapter 3, Article 24).

5) Fishers who are permitted in the marine fisheries domain must respect the order or act mentioned in the fishing license. Records must be kept on the daily catch of fish and other organisms, and reported monthly to the provincial municipal fisheries authority (Chapter 3, Article 25).

6) All kinds of fishing gear, extending across a stream, inlet or navigable channel of coastal zones, must have a free space of one-third of its width during low tide to enable the navigation of vessels (Chapter 3, Article 26).

7) Trawling in shallow waters (depth less than 20m) is prohibited, except where special permission is granted by the DoF for scientific research (Chapter 3, Article 28).

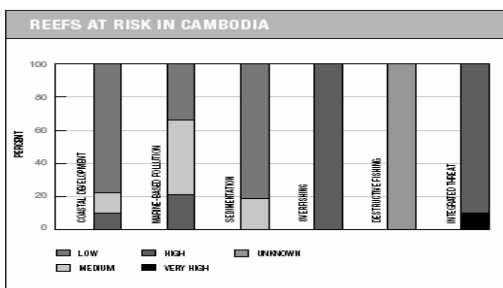
8) Using electro-fishing gears and all kinds of explosive or modern fishing gear, which are not mentioned in the proclamation of the Ministry of Agriculture, are absolutely prohibited (Chapter 3, Article 29).

- Improve the current legislations to make them applicable for coral reef management and conservation
- Capacity Building/provide training on Community Fisheries Management to Fisheries Officers and fishing communities
- Help to develop sustainable livelihood to Community Fisheries

- Enhance dialogue between fishing communities, officials and other stakeholders
- Research the danger arising from resident communities, illegal fishing, and development
- Conduct outreach program locally and on the mainland, highlighting these threats to the islands
- Develop cooperation with the communities to adopt environment friendly practices that reduce pollution and waste
- Working with politicians to gain support for the marine sanctuary and develop strong protection policies.

■ **THREATEN TO CORAL REEF/ COASTAL AREAS:**

1. Sewage and waste disposal: There is no sewage and waste disposal system in many public gathering places. Everything from sewage, garbage and oil gets dumped into the sea.



Reefs at Risk Indicators 2002, overfishing and destructive fishing are high in 2004 (Estimated Change)

2. Fishing and fishing methods: The fish catch is worse than before with catch is declining, and more effort needed to catch the same amount of fish. The catch was still good in the 1980's, but started declining from 1995; catch is not enough for the locals survive on. It is due to big fishing boats use commercial fishing techniques like net trawling, dynamite fishing, using electricity to stun and kill fish that flout the rules and destroy the environment.

Dynamite fishing was previously a big problem but has since been clamped down on and is now a manageable. However net trawling is still a major concerns. Some of the trawlers are small boats not equipped to go out to deep sea, and use their nets in shallow waters of depths less than 20m, which cause extensive damage to the reefs. The fishermen are able to fish all year round, they fish both during day and night, except when the weather gets too stormy, particular during the rainy season.

3. Corals, which used to be a booming trade in Sihanouk Ville, Kampot and Kep, no longer have a market there.

■ **FURTHER ACTION PLANS:**

A threat assessment of coastline and archipelagos will identify illegal fishing and destructive activities; identity the factors involved to focus the direction of patrol plans; and promote capacity building and alternate livelihood programs for communities on the coastline.

- To develop small-scale aquaculture, to determine priority areas for installation of anti-trawlers barriers such as artificial reefs along the coast, buoys, to stop trawlers approach the coastline, to conduct participatory appraisal to find alternative sources of food and income for communities' fisheries. Billboards will be placed offshore to instruct on fishing rules and regulations and delineate clearly the marine sanctuary borders. DoF will interface with local fishermen to monitor their fishing activities and insure no illegal and destructive actions are taken. Foreign fishing trawler companies will be dissuaded to fish Cambodian waters through direct action on the sea.
- Education of local fishing communities on sustainable management of fisheries resources will include a combination of training in participatory

assessment and consultation of local needs. Other stakeholders will be educated on the value and fragility of marine life, mangrove forest, coastal and marine conservation component. Nationwide campaigning will be undertaken, in order to reach all stakeholders at all levels as well as foreign industrial trawlers to gain support for marine sanctuary and raise awareness on the destructive impact of mass industrial, dynamite and chemical fishing.

- A baseline biodiversity survey to evaluate the status of conservation of marine fauna and flora is needed.

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