Country Paper of SAI Bangladesh

Title of the Paper:
Conservation of Nature and Biodiversity of St. Martin's Island - An Assessment.

1.0. Introduction:

Bangladesh, a small county (1,47,570 sqkm.) in South Asia with a huge population (157 million) became independent in 1971 through a nine month blood shedding war. The country is bordered on the west, north, and east with India, on the southeast with Myanmar, and with the Bay of Bengal to the south.

Geologically, Bangladesh is a part of the Bengal Basin, one of the largest geosynclinals in the world. The Basin is bordered on the north by the steep Tertiary Himalayas on the northeast and east by the late Tertiary Shillong Plateau, the Tripura hills of lesser elevation, and the Naga-Lusai olded belt; and in the west by the moderately high, ancient Chotanagpur plateau. The southern fringe of the basin is not distinct but geophysical evidence indicates it is open towards the Bay of Bengal for a considerable distance.

Despite huge number of population, Bangladesh economy increasing more than 6 percent for the last few years and is being considered an emerging economy of the South Asia. But the country is environmentally vulnerable due to the recent climate change and global warming, encountering regular flood and cyclones. Bay of Bengal occupies the total southern part of this country. Change in climate turning the northern part of this country into desert while rise in sea level inundating the southern part where most of the cultivable land losing their fertility due to salinity of water.

At this stage, the only coral Island named "Saint Martin's", a 8 sqkm long Island 11 km away from the mainland in the Bay of Bengal, is at a stake environmentally, loosing it's natural beauty and biodiversity due to the environmental change with some human being created reasons. The Island has national significance as well as ecological, social, environmental, biogeographically, economic and scientific importance. This is a unique Island with unique ecosystem and the only place where corals are found. The Island has become fragile and is under different threats relating to over exploration of mollusks, coral resources and excessive fishing along with increasing population.

Under the National Conservation Strategy (NCS) Implementation a project "Conservation of Biodiversity, Marine Park Establishment and Eco-tourism Development at St. Martin's Island" had been executed by the Ministry of Environment and Forest to safeguard the environment of this Island.

Main objectives of the project on which the audit was conducted are to conserve the ecologically important molluscan resources and coral bearing Island of the country St. Martin's through measure with the local peoples participation; to conserve and enhance the molluscan, coral resources and around the Island- the only place in Bangladesh where this important biological resource is available; conservation of other flora and fauna of the Island; conservation and development of Marine Turtle breeding ground; to develop viable eco-tourism in the Island; to designate, develop and manage the Island as a marine park in the subsequent stage; to improve the socio-economic status of people of the Island; to establish a marine laboratory to facilitate research on molluscan, coral, flora, fauna and marine ecosystem; to establish necessary institutional set-up in place.

2.0. Audit Planning

Prior to execute field level audit the audit team prepared their audit plan based on the information and documents available from Ministry of Environment as well as from project documents. The audit team determined the risks, materiality and audit criteria based on the prevailing Acts, Policies and International Treaties on Environment effective in Bangladesh. Moreover, the audit team discussed the audit issues with the professional and experts in the related field.

3.0. Scope of Audit

The audit covered the whole periods of activities of the project from 2000 to 2007 focusing particularly on the achievements of project activities in protecting the nature and biodiversity of the Island as well as evaluation of impact of the project activities so far implemented.

4.0. Objectives of the Audit

Following the objectives of the project the audit was conducted to assess participation of the local people in protecting the biodiversity and ecosystem of the Island; conservation process/actions/steps for improvement and protection of coral resources; protection of breeding and reproduction of Marine turtles; conservation of flora & fauna; measures taken for improvement of Marine Park and Marine research centre; socio economic development of the inhabitants; creation of the Scope of eco-tourism; development and proper utilization of marine resources; recommendation based on audit findings.

5.0. Methodology of the Audit:

The audit was conducted in general by collection and assessment of primary information as well as secondary documents. In particular following information and documents are analyzed.

- Project document
- Annual work plan of project implementation
- Monitoring and supervision process of project implementation
- Substantive test through performance measuring process
- Collection of information through audit queries
- Collection of information through interview and questionnaire
- Expert opinions
- Discussion with local inhabitants and other stakeholders
- Audit by random sampling
- Evaluation report by Implementation Monitoring and Evaluation Department (IMED) of Ministry of Planning

6.0. Audit Criteria:

The following are taken into account as audit criteria in conducting this audit:

- Guidelines for project implementation illustrated in the project proforma
- Expert opinions
- Relevant Acts, Rules, Policies and Orders of the Government
- Relevant International Treaties/ Protocols regarding conservation of environment
- Related international standard expressed in research papers, articles and journals

7.0. Major Findings:

Audit highlights some significant findings as mentioned below:

- Government could not hold the ownership on land and could not refrain from setting up illegal structures built for different purposes;

- No action had been taken for supply of pure drinking water along with hygienic drainage and sewerage system;
- No action had been taken for conservation and improvement of environment, especially aquatic pollution;
- Uncontrolled movement and natural resource collection by the tourists;
- No action had been taken for reproduction and increasing of marine turtles and conservation of migratory species of wild animals as well as wild flora and fauna;
- Inadequate action for maintaining ecosystem, nature and natural resources;
- Inadequate measures for coral preservation;
- No steps so far taken for establishing eco-tourism and marine park;

8.0. Reasons for not achieving the targets/objectives of the project:

From the above audit findings it is obvious that the project could not achieve its targets as intended resulting into endangering the only coral Island of Bangladesh.

According to Audit findings the reasons for not achieving the objectives of the project are manifold. Some of the important reasons are highlighted below:

- Effective Project planning was not done in order to ensure proper conservation of nature and biodiversity of the Island;
- There was no master plan for overall management and implementation of the entire project
- The action planning of the project was not implemented following the expert opinions and recommendations;
- No attempts had been made to make environmental impact assessment of different projects on environmental issues of this Island of different sizes in order to have well coordination among the implementing agencies of those projects.
- Absence of motivational activities from project authorities for spontaneous and active participation of local people;
- Violation of relevant government policies for establishing physical infrastructure;
- Appropriate steps were not taken for establishing Marine Protected Area with Marine Park considering the national interest;
- No effective steps had been considered to protect natural environment of this Island by addressing crucial issues like unplanned establishment of hotel, motel, hatchery, houses , soil erosion, cutting woods and destroying natural resources etc;
- No declaration of Protected Zone for reproduction of marine turtles;
- Proper attention were not given for waste management and reduction of use of polythene;
- Lack of appropriate initiatives to control excessive fishing causing imbalance for the ecosystem;
- Lack of monitoring, supervision of the project activities by competent authorities;
- Lack of internal control mechanism;
- No legal action taken on free movement and collection of natural resources by the tourists;
- Non-compliance of International Treaties on endangered and migratory species of flora and fauna;

9.0. Audit Recommendations:

Based on the audit findings following recommendations are made by the audit:

- Removal of the illegal physical structures built for different residential and commercial purposes to preserve the biodiversity of the Island;
- Motivation activities should be taken for the local people for their spontaneous participation in conservation of the nature and environment;
- Expert opinion should be sought from environment scientists for conservation of environment and ecosystem;
- Establishing research centre for conservation of coral and ecosystem;
- Finding out the suitable policies for reducing/migrating local inhabitants elsewhere from this Island
- Facilitating tourism friendly atmosphere by controlling movement of tourists and refraining them from collecting natural resources ;
- Establishing marine drive and marine park and realistic eco-tourism;
- Increasing facilities for pure drinking water and improving drainage and sewerage system ;
- Re-establishing mostly abolished flora and fauna;
- Setting up of coral garden
- Compliance of all national and international policies and treaties for conversation of environment;

10. Recommendation of Public Accounts Committee (PAC) on the Audit Report:

The audit report has been discussed in Public Accounts Committee (PAC) and the committee has given some directives to the executives as mentioned below:

- Determining proper settlement policy for the local people in the Island;
- To allocate land according to suitable policy for sustaining bio-diversity and environment of the Island;
- Arranging pure drinking water and proper drainage system to avoid water pollution, also taking care of health issues of the local people;
- Take necessary steps for tourist friendly environment without hampering the ecosystem and environment;
- To seek expert opinion from Marine Scientists for enhancing marine research and to protect marine turtles in an appropriate manner;
- Experience of UNDP and Australia should be adapted in this regard to protect the coral Island;
- Effective steps from Ministry and Department of Environment are required for establishing eco-tourism & Marine Park.
- Audit should have mentioned the financial implications of related issues of the project activities or the activities of the implementing agencies of the projects for ensuring proper environment of the Island in conducting performance audit.

PAC also expressed deep concern for not taking immediate measures by the executives following the audit findings.

11. Challenges and Barriers:

The audit was highly technical in nature and there was acute shortage of trained and skilled manpower along with experience in conducting environmental audit. Accordingly the audit had to take some expert opinions from the professional which sometimes delayed the audit process due to non availability of experts as and when required. Due to time and other resource constraint the audit could

not take into account the financial aspects of the project in implementing the project activities for ensuring sustainable development of environment of the Island.

12. Lesson Learned and way forward

From the experience of conducting the audit the SAI has already made some arrangement to train some of its officials for effective auditing on environmental issues despite resource constraints. But these are not adequate to respond to the needs of different stakeholders to ensure proper accountability of executives in maintaining sustainable development of environment of this country.

It is worth mentioning that considering various limitations, SAI Bangladesh has already undertaken two more environmental audit on pilot basis under the project titled SPEMP B funded by the donor consortium which are fully ISSAI complaint. The two ongoing pilot audits on environmental issues are:

1. Impact assessment on use of chemical and formalin in food.
2. Hospital waste management and its impact on environment.

14. Conclusion:

SAI Bangladesh is committed to ensure accountability in ensuring sustainable development of environment of the country and accordingly has already taken different initiatives to diversify its audit activities in different crucial and relevant fields to meet the demand of different stakeholders. As the environmental issues are major concerns now-a-days, so like other SAIs, Bangladesh is trying to move forward having different constraints like shortage of skilled manpower, financial resources and specialized experience. Cooperation (bilateral or multilateral) and more support from regional bodies of INTOSAI, INTOSAI IDI and international donor community and from other SAIs regarding their experience in the field of environment auditing can better help to overcome the constraints of SAI Bangladesh.

Country Paper on Ocean Acidification Audit (United States)

Background

The United States Government Accountability Office (GAO) is nearing completion of an environmental audit reviewing our government's efforts to address ocean acidification. The audit was started in 2013 and GAO expects to publically release its final report in October 2014. Although GAO has previously conducted numerous audits focused on climate change, this audit represents the first time that GAO has specifically examined ocean acidification.

Ocean acidification affects many different aspects of government policy—including those related to science, oceans, fisheries, agriculture, and air and water pollution—and understanding and responding to acidification, therefore, involves multiple government agencies. In the case of the United States, 11 federal agencies with widely varying missions are contributing to the government response to ocean acidification.

In the United States, federal efforts to address ocean acidification are largely centered on the implementation of the Federal Ocean Acidification Research and Monitoring Act of 2009 (FOARAM). This act required the government to establish an interagency working group on ocean acidification, which would then be responsible for developing a strategic plan to guide ocean acidification research and monitoring efforts, and requires the federal agency primarily responsible for oceans and marine fisheries to establish an ocean acidification program. The act also recognizes the importance of coordinating research and monitoring internationally.

Audit Objectives

The specific objectives of GAO's audit were to review (1) the scientific understanding of the effects of ocean acidification; (2) the extent to which federal agencies have implemented FOARAM, and (3) additional actions, if any, that could be taken to advance the federal response to ocean acidification.

Methodology

GAO used a variety of information sources and approaches to address these objectives, including:

- Reviewing summary reports, based on extensive reviews of the scientific literature, describing the potential effects of ocean acidification. The reports were developed by federal agencies, state agencies, and intergovernmental entities. The audit team's review focused on four broad areas: changes to ocean chemistry, effects on individual species, effects on ecosystems, and socioeconomic effects;
- Reviewing documents from federal agencies related to their implementation of FOARAM and other activities related to addressing ocean acidification; and
- Interviewing a variety of knowledgeable stakeholders, including ocean acidification scientists, officials from the 10 federal agencies serving on the interagency working group, state and regional officials, and representatives of the fishing industry and conservation groups.
- Applying criteria such as the requirements of FOARAM and GAO's previous work on best practices for interagency collaboration.

Theme:	"Project Research Marine Environment WGEA 2013-2016"
Team :	GAO (lead), USA, Indonesia (Sub Committee), Etc

PERFORMANCE AUDIT ON INDONESIA CORAL REEF ECOSYSTEM PROTECTION

IN 2011-2012

1. BACKGROUND

Indonesia is the country with the coral reefs support 6 million people with direct employment, (UN FAO) and Indonesian biodiversity is responsible for over 11% of GDP. highest The area of coral reef in Indonesia had reached 12% -15% of the area of coral reefs in the world, then Indonesia was the epicenter of the distribution of the world's coral reef. This coastal ecosystem give protection to coastal areas from strong waves and abrasion, place for fishes and variety of marine life spawning, tourism area, and producer of ornamental fish that can be a useful natural resources for humans.

Management of coral reef ecosystems is needed to regulate the human activity from the destructive exploitation ways, therefore the management must be based on community involvement. This involvement is very important, start from planning, implementation, monitoring, until evaluation phase in this management. The Condition of Indonesia's coral reefs that getting worse could affect fish catches of fishermen. The population growth and development in coastal areas that rapidly led to an increased pressure on coral reef ecosystems.

In an effort to rescue the coral reef ecosystem, Ministry of Marine Affairs and Fisheries implement Conservation Management and Development Programed for Species and Area in the Directorate KKJI also rehabilitation and management programed for coral reef - COREMAP (Coral Reef Rehabilitation and Management Project).

2. OBJECTIVES OF AUDIT

Assessing the effectiveness of coral reef ecosystems management especially for the **Coral Reef Rehabilitation and Management Program (COREMAP) phase II** by the Ministry of Marine Affairs and Fisheries.

3. AUDIT METHODOLOGY

a. Planning

Conduct a preliminary audit to identify the problem, determine key areas and scope of the audit, based on the following factors: (1) Management risks, (2) Significance of a program, (3) Audit Impact, and (4) Auditability. In addition, Internal Control is done through understanding The Committee of Sponsoring Organizations of the Treadway Commission (COSO) approach, which includes: (1) Control Environment, (2) Risk Assessment, (3) Control Activities, (4) Communication and Information, and (5) Monitoring.

b. Implementation

1) *Review*

The Review of the laws and regulations, policies and procedures, whether it can hinder the achievement of entity objectives in managing coral ecosystems. The Review is done through analysis, interviews and Focus Group Discussion (FGD).

2) *Examination*

The audit was conducted using combination several techniques such as data analysis; in-depth interview, field inspection, confirmation, and analytical review..

3) *Audit Sampling*

The samples of this audit are coral reef ecosystems management in the region of Southeast Sulawesi, South Sulawesi and Riau Islands.

Riau region was chosen because the coral reefs in this area are highly influenced by human activities. Meanwhile, Southeast Sulawesi and South Sulawesi, were chosen for the high coral diversity they have. These areas also included in Coral Triangle initiative (CTI), which represents the regions which have low impact of human activity and believed to be affected by environmental factor such as climate changes.

c. Reporting

Audit report was based on audit findings which includes conclusion and recommendation. The report should be able to answer the audit objectives.

4. AUDIT SCOPE

The scope of the audit is the government effort in the protection of coral reef ecosystems in fiscal year 2011-2012. The activities chosen as Key Area of the audit are: public awareness activities, community-based management, marine conservation area, maintenance and rehabilitation of coral reef ecosystems, and also Monitoring Controlling and Surveillance (MCS). Entity of performance audit was Ministry of Marine Affairs and Fisheries and the province/district/town department of Marine and Fisheries in Riau Islands, South East Sulawesi, and South Sulawesi.

5. AUDIT CRITERIA

a. Article VIII and IX CITES (*Convention on International Trade in Endangered Species of Wild Fauna and Flora)*.
b. Law No. 31 of 2004 on Fisheries
c. Law No. 27 Year 2007 on Management of Coastal Areas and Small Islands
d. Government Regulation No. 60 Year 2007 on the Conservation of Fish Resources
e. Regulation of the Minister of Maritime Affairs and Fisheries No. 2 of 2009 on Procedures for Determination of Water Conservation
f. Regulation of the Minister of Maritime Affairs and Fisheries No. PER.30 / MEN / 2010 on the Management Plan and Zoning Water Conservation;
g. Regulation of the Minister of Maritime Affairs and Fisheries No. KEP.38 / MEN / 2004 on General Guidelines for Management of Coral Reefs; Chapter III on National Coral Reef Management Policy

h. Strategic Plan of the Ministry of Maritime Affairs and Fisheries, 2010-2014 Chapter III of the Policy Direction and Strategy.
i. Project Appraisal Document (PAD) COREMAP II World Bank
j. Project Administration Memorandum (PAM) COREMAP II Asian Development Bank (ADB)

6. SUMMARY OF THE FINDING

SAI of Indonesia has done the performance audit of the coral reef ecosystem protection with the aim to assess the effectiveness of coral reef ecosystems management in November until December 2012.

Performance audit results concluded that the coral reef ecosystem management by Ministry of Marine Affairs and Fisheries and the province/district/town department of Marine and Fisheries have not optimally done. This led to the failure to achieve the targets set in strategic plan 2010-2014 which are 20% of the coral reefs, sea grass, mangroves are properly managed; 15 species of endangered aquatic biota are safe from extinction, and 4.5 million hectares area of marine protected areas and conservation of freshwater and brackish are sustainably managed.

7. KEY FINDING (associated with climate change)

a. Biophysical indicators at Multiple Locations of COREMAP II did not show any Significant Achievement

Based on assessment report per district, several important results were found as follows:

1) There is a declining trend in the percentage of live coral cover during 2006-2011 within the four districts. Even worse, in other three districts, the trend showed that there is an increase in the percentage of dead coral covered with algae.

2) The total number of *megabentos* within nine districts and the number of fishes live in the coral reefs in three districts did not showed any improvement and tend to be decreasing compared to the initial conditions (baseline).

3) COREMAP II Monitoring and Evaluation Team confirmed that the ministry does not have an action plan to address any problems in the districts. This led to the declining or stagnant value of each indicator. The team added that the only action plan they have was made based on survey results from sample districts, without specific measures on certain locations.

The Assessment of the achievement of biophysical indicators, has done through surveys and research conducted by experts on the condition of coral cover and reef fish before the program (baseline) and after the program. The Survey and research carried out at regular intervals during the period of 2006 through 2011. First, the data about condition of coral reefs in some COREMAP II area were collected using survey report submitted by region or district. Then the report compiled as information for material in Implementation Completion Report (ICR). Indicators used to survey the condition of coral reefs are: the condition of live coral cover (LC), the number of *megabentos*, the number of dead coral (DCA), and the condition of fishes live in the coral reef.

b. COREMAP II program was not an effective tool to ensure protection of coral reefs in the sample region.

Monitoring results of the conditions of living coral cover, the numbers of reef fish and *megabentos* done in the depth of 3m and 10m of COREMAP II region (Project areas) and Non-COREMAP II region (Non-project areas) showed that:

1) Non-project areas had higher coral cover compare to the project areas. On the projects area (in depth of 3m) had average 12.5% of coral cover, while the average value of coral covers in the 3 non-project regions were vary from18.25%, 25%, to 43%). In the depth of 10m, the coral cover of projects area was 13%, while non-projects area were 19%, 42% and 49%.

2) The numbers of indicator fishes live within projects area do not vary much with the non-projects. While the abundance of major fish and fish targets at projects area is much higher than the abundance of major fish and non-target fish in the non projects area;

3) There were no significant differences between the numbers of *megabentos* at an average depth of 3m and 10m, bothin projects and non-projects areas.

8. AUDIT RECOMENDATION

SAI Indonesia recommends that the Ministry of marine and fisheries to improve coordination with other related parties to construct the water conservation management plan and establish action plan for better COREMAP implementations in the future.

9. ANY INFORMATION

Based on Implementation Completion and Results Report (ICR) by World Bank stated that beside of human activity, others factors outside the control of the project, i.e., environmental factors like sea surface temperature, acidification, bleaching and storm damage (which are related to climate change) can affect live coral cover. It is impossible to describe the changes of live coral cover in project areas without any adequate control measures to distinct the project and non-project areas.
The difference in live coral cover between project intervention sites and those reefs outside the Project area—also subject to climate change impacts—might have been even greater than the positive change in coral cover from Time 0 to the end of Project recorded in most COREMAP sites.

10. CHALLENGES AND BARRIERS

Challenges:

1. Remote sensing and GIS technology has not been used to support the audit.
2. Environmental impacts caused by the increase of sea water temperature have not been measured properly.
3. Monitoring of the impact of global warming require a long period of time and sustained effort.

Barriers:

1. Indonesia has vast sea area.
2. Technology infrastructure is limited.
3. Lack of sufficient/ valid environmental data.