Integrated Ecosystem Management - Pursuing a Quality Economy in Biosphere Reserves

With thematic discussions of MAB on biosphere reserves application in large wetland areas in Asia

Champasak Palace
Pakse District, Champasak Province,
Lao PDR, 3 - 7 October 2005

Organized by:
Prime Minister's Office, Science Technology and Environment Agency (STEA), Lao PDR;
Lao PDR National Commission for UNESCO;
UNESCO Office in Jakarta and Apia

With support from
The Government of Japan
Lake Tonle Sap, the largest lake in the Southeast Asia, is well-known that it has been closely associated with the lives and culture of the Cambodian people since the Khmer Dynastic periods till the present time. The lake is also famous as "the elastic water world" because its water area expands drastically in rainy seasons, and as "the heart of Cambodia" referring to various and multifarious freshwater organisms, edible fish in particular. Such settings hold out a promising prospect for investigations of unique freshwater ecosystem in the lake and its related water system under the control of dynamic seasonal fluctuation in both water level and area due to alternating rainy and dry seasons. However, no systematic and overall ecological researches have been made in the lake, in spite of scientific and social importance of the lake has been strongly pointed out from various fields.

Two geological research programmes "Tonle Sap 96 Project" in 1996 and "Tonle Sap 21 Programme" from 2000 to 2002 both lead by Shinji Tsukawaki of Kanazawa University cooperating with General Department of Mineral Resources, Ministry of Industry, Mines and Energy, Kingdom of Cambodia were carried out and completed to investigate geological and environmental developments of the lake since its birth to the present day. As the result of both programmes, the geological history and environmental changes of the lake and related water system were concluded that the lake was born as small lakes in the central part of the Tonle Sap Basin at about 7,500 years B. P, and the present great lake was created by an environmental event which is a connexion of the lake with the Mekong River around 5,500 years B. P due to the Holocene sea level rise and the following its high stand. Further, both programmes throw light on that the lake has become a stable water area sedimentologically and hydrologically since the time of the event to the present.
On the basis of the results of the above-mentioned programmes and taking the results of the other related studies of the lake by Shinji Tsukawaki and his colleagues into account, the "Tonle Sap EMSB Programme: Evaluation of Mechanisms Sustaining the Biodiversity of Lake Tonle Sap, Cambodia", Grant-in-Aid for International Scientific Research (15405004), has been planned as a three-year cooperative research study between Cambodia and Japan. As for the overall surveys of the programme, field studies from various scientific fields such as invertebrate zoology, plant ecology, physical and chemical limnology, meteorology, geology and geomorphology, and so on will be carried out in and around both northern and southern parts of the lake during both dry and rainy seasons by regular and collaborating scientific members focusing on evaluation mechanisms sustaining the biodiversity of the lake.

The overall field surveys of the EMSB programme have been successfully accomplished in November 2003 and May 2004. However, in spite of marked year-round change of the water environment and possible related seasonal fluctuations of ecosystem in the lake have been recognised afresh during the course of the surveys, countermeasures for them have become a prompt subject of discussion within the team. Because the overall field surveys of the programme has been scheduled only in seasons of both lowest and highest water-level of the lake, execution of some additional surveys between the seasons have to be needed to detect the above-mentioned changes. Further, generally speaking it is necessary to carry out a number of years observations for all scientific researches. Preliminary arrangements of long-term observations are urgently necessary for the lake to sustain its plentiful present environment, the great biodiversity in particular.

In spite of importance of Lake Tonle Sap in various meaning has been accepted as being beyond doubt and the EMSB programme which is the first systematic and scientific research programme of the lake concerning with the biodiversity of the lake has started already, there are two problems awaiting prompt solution as stated above. Judging from the present situations, encouragement of young scientists and technical experts such as graduate students and research associates of universities or institutions in both Japan and Cambodia in each scientific field should be the best means to settle the problems. All scientific members of the EMSB programme are real specialists in each scientific field and they have been spending much time for the research in the lake as possible. However, because most of them occupy important posts of their universities or national institutions, there is a difficulty to spend their most time for the research of the lake. On the other hand, young scientists or technical experts will be able to concentrate on the research of the lake, and they will be able to carry out the long-term observation and monitoring of the lake.

Accordingly it is concluded that setting up a new research team consisting of young researchers and technical experts in Japan and Cambodia as a supplement team of the EMSB team but the main body in future should be an urgent need to solve the above stated problems. The new team will work tightly cooperating with the EMSB team during its first year activity under a guidance of the EMSB team to learn research techniques and to acquire experience to work in the lake. After the period, the team will start the research in the lake as the occasion demands corresponding to delicate seasonal fluctuation of the lake. Taking drastic measures to solve the above-mentioned pressing subjects recognised during the course of the first overall field survey of the Tonle Sap EMSB Programme, the new programme "Tonle Sap EMSB-u32 Programme" has started for the purposes of first to establish a new collaborative team which is very adaptable to carry out field researches according to varied circumstances of the lake, and secondly to settle young researchers and technical experts of both Japanese and Cambodians in a continuous long-term activity on the lake on the various scientific fields.
All members of the u32 team will learn first techniques of field research in every scientific field through the cooperative fieldwork with the EMSB team, and the Japanese members will become skilled in the fieldwork in Cambodia situated in the tropical region. Then, members of the u32 team will carry out their fieldwork sometimes independently in certain seasons of the lake based on the considerable acquirements at the time comes. Further, it is expected that they will understand the importance of interdisciplinary research to elucidate the harmony between ecosystem and natural environment of the lake through the fieldwork in collaboration. Thus, it is concluded that objectives and goal of the programme should be encouragement and promotion of young researchers and technical experts to improve and continue interdisciplinary scientific research on the lake.

Four field missions, November-December 2004, February-March 2005, May-June 2005 and July-August 2005, and one optional mission in January 2005 of the u32 team were successfully accomplished on Lake Tonle Sap. In spite of most data of each scientific field have been still under the examination, the field activities of the team and the preliminary results of the missions will be presented in the workshop.