

**International Symposium on Environmental Specimen Bank
December 3–5, 2009, Ehime University, Matsuyama, Japan
Concluding Session—Suggestions for Establishing ESBs
in Developing Countries: Necessity and Possibility**

The Concluding Session of the symposium was held in the morning of 5th December 2009. Apart from the scientists of the Center for Marine Environmental Studies (CMES) of Ehime University, most of the symposium participants representing universities/government institutions/research laboratories in India, Indonesia, Vietnam, Republic of Korea, Ghana, USA, Germany, France, Brazil, Italy and Portugal attended this session, actively took part in the discussion and expressed their opinions. Dr. Annamalai Subramanian, Professor, Center for Marine Environmental Studies, Ehime University, Japan chaired the session Dr. Babu Rajendran and Mr. Kwadwo Ansong Asante rapporteured. In his opening remarks Dr. Subramanian emphasized the importance of having ESBs in developing countries and sought opinions of scientists from developing countries and suggestions from established ESB. He proposed the advertisement of ESB activities to funding agencies and a developing country hosting the next International Symposium on specimen bank.

Prof. Natesan Munuswamy of University of Madras, India stated that the concept of ESB was known to him and many Indian scientists only very recently. He stressed that the scientists in India need to formulate the concept and convince policy makers and heads of funding agencies by making them know the importance and value of ESBs. Thus, there is the need to submit a proposal to the government of India. He said further that there may be lot of ethical and quarantine problems. If partial funding could come from foreign countries, then Indian government would support it, he concluded.

Dr. Djamaludeen of Indonesia expressed that funding is not a problem for setting an ESB in his country, but appraising the officials, end users and scientific community is more critical than getting funds. He also suggested that conducting a similar symposium in Indonesia may help in getting funds from Indonesian government for setting up an ESB. He stressed for co-operation and building stronger ties with developed countries having established ESBs.

Prof. Pham Hung Viet from Vietnam said there were two issues in each country; environmental pollution and assessment, and environmental technology, and that his government's priority is more towards solving the environmental problems. He added that collection and storage of samples are important but the Vietnamese government is not in a position to fund it. He therefore suggested there should be international co-operation with UNICEF, UNEP, JICA etc. to

support the ESBs if the government of Vietnam has to show more involvement.

Prof. Subramanian requested the frank opinions on the necessity and feasibility of having ESBs in developing countries from the scientists of developed countries.

Prof. Bruno Cozzi from Italy said with his experience, he has a different view to the concept of ESBs and if he were to develop one in a country, he would first look out for a museum of natural history and then think of analysis and storage. He advised countries going into the establishment of ESBs not to think of large samples but to start with water, soil and insects and that many museums already have many samples. What was left is to identify other laboratories that can carry out the analysis, he added.

Dr. Paul R. Becker said that integrating with the existing facilities is a good idea; for example, in Alaska, the ESB was associated with the museum from where they had analyzed bird and marine mammal samples and thus, their resources were used for environmental studies. He advised the countries wishing to go into ESBs to start with basic ideas and concepts as well as limited equipment and later build on it.

Dr. Marike Kolossa-Gehring from Germany on her part said that she had similar opinion and agrees fully with Dr. Becker. She emphasized that it will be good to start ESB in developing countries since recent developments may change those countries in future. From her experience, she said that they had never used some of their collected samples and reiterated the need to restrict the number of samples and start with studies on effects of chemicals on animal health and environment. She mentioned that her laboratory is willing to provide technical knowledge and other information to entrants who would visit them for internship. When the Chairman asked for the possibility of arranging internship programs, Prof. Gehring replied that, aside the possibility of organizing the internships, there are activities and already established programs in Europe and they could link interested countries up.

Prof. Gilberto Fillmann from Brazil noted that one key thing for the establishment of ESB was to make clear the aims. He added that there were different ways to store samples. He cautioned the developing countries to start slowly. He however said that one thing that should be clear is the best and appropriate strategy. He narrated his experience on how he started on his own by collecting and keeping samples in refrigerators he personally bought. He reckoned one possibility is getting money from private companies (e.g. oil companies in Brazil) and not to rely solely on government.

Prof. Subramanian chipped in to say that their aim is to have a pilot or small ESB in India and not as big as the one shown by Prof. Shim Won-Joon from Korea in his presentation. He also said that there are many logistic problems in bringing all the samples collected in other countries to established ESBs and so small banks should be established in many countries. Prof. Shinsuke Tanabe said environmental problem is getting worse in developing nations and recommended developed nations to help the developing countries in keeping the samples until they establish their own ESBs. He urged developed nations to have more collaborative research with scientists from developing countries to equip them

with the technical know-how and to enhance knowledge transfer.

Dr. Rudell from Germany rhetorically asked what ESBs should do for the policy makers to support it. He said case studies from developed countries could be explained to policy makers and funding agencies. He also pointed out that the policy makers in developing countries should be appraised about how the ESBs can help in keeping track and controlling the environmental pollution.

Mr. Gnanasekaran Devanathan a student from Ehime University requested that the existing ESBs should give training to young scientists on how to collect and store samples. Prof. Marike Kolossa-Gehring from the German Federal Environment Agency said that setting up of an ESB is capital intensive and also voiced her support for the collaboration of scientists from developed and developing countries.

Dr. Birgit Braune from Canada said she is of the opinion that contaminant monitoring research is driven by environmental concerns and also advised scientists to try to address the questions policy makers ask, in order to build a good scientific relationship and to have good links with government.

Prof. Kurunthachalam Kannan from the State University of New York, USA had some recommendations for the Indian scientists. He asked them to convince politicians to establish ESBs in some already existing museums. Thus, the ESBs could go on with museums. Based on the Stockholm Convention, some trend studies should be done and that require archived samples, he added.

Dr. Andrea Gies pointed out money, skill and awareness as three basic problems, and stressed that for Korea, China and Indonesia, money and skills are not problems but awareness is.

Dr. Yasuyuki Shibata from NIES, Japan made it known that their outfit now has the opportunity to organize regional network to expand the activity and that the secretariat would start regional meetings next year.

When Prof. Subramanian put the question as to who wants to host the next ESB meeting in a developing country, Dr. Marike Kolossa-Gehring reminded the house of the upcoming International Conference on Environmental Specimen Banking in Berlin in 2010. Dr. Ridwan Djamaluddin responded to Prof. Subramanian and said he would carry the idea to his country and get back to him after Berlin 2010. He again emphasized the need to build more awareness not only among scientists, but among policy makers as well. Prof. Pham Hung Viet proposed 2011–2012 as suitable for him to convene the meeting in Vietnam but he has to confer first with Vietnam EPA, while Prof. Natesan Munuswamy said that he will have to discuss this with the Indian government.