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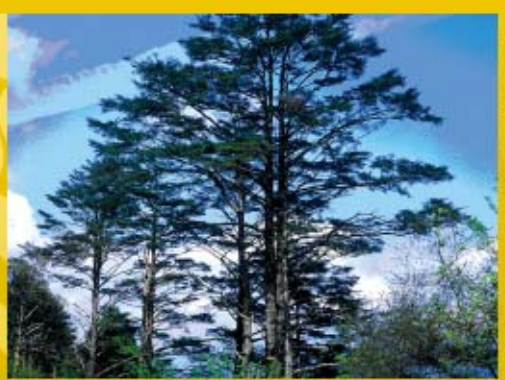
United Nations
Educational, Scientific and
Cultural Organization

"Implementation of MAB's Seville Strategy and Madrid Action Plan in Biosphere Reserves"

(Report of the 11th Meeting of UNESCO-MAB East Asian Biosphere Reserve Network)

10-15 November 2009



EABRN Secretariat, UNESCO Office in Beijing

Wuyishan Natural Reserve Management Bureau

The 11th Meeting of UNESCO-MAB East Asian Biosphere Reserve Network (EABRN-11)

"Implementation of MAB's Seville Strategy and Madrid Action Plan in Biosphere Reserves"

10-15 November 2009
Wuyishan Biosphere Reserves,
Wuyishan, P R. China

Organized by
Chinese MAB National Committee
Chinese National Commission for UNESCO
EABRN Secretariat, UNESCO Office in Beijing
Wuyishan Natural Reserve Management Bureau

Sponsored by
Ministry of Environment, ROK

Note from the Editors

This report on the 11th Meeting of the East Asian Biosphere Reserve Network comprises summaries, presentation papers, and country reports. The editors changed the format of the papers for the sake of uniformity, from which we hope readers to feel comfortable, and rearranged the order of papers in order to reflect better where their contents are categorized into. However, only a minimum modification was made to the papers.

The editors give thanks to all the participants for their valuable contributions to the Meeting and this final report. As always, we welcome any comments from readers for the improvement of EABRN publication.

Dr. Ramasamy Jayakumar
Mr. Liu Ke
Ms. Duan Xiaoli
Ms. Teng Yue
UNESCO Office Beijing

Published by UNESCO Office Beijing
Waijiaogongyu 5-15-3
Jianguomenwai Compound
Beijing, 100600 P. R. China
Tel: +86 10 6532-2828
Fax: +86 10 6532 4854
http://www.unesco.org

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Table of contents

Executive Summary

The 11th Meeting of UNESCO-MAB East Asian Biosphere Reserve Network (EABRN-11) was held at Mt. Wuyi Biosphere Reserve in Mt. Wuyi, Fujian Province, China. Mt. Wuyi was inscribed on the UNESCO world heritage list both cultural and natural in 1999. The Wuyi Mountains are the most representative example of subtropical forests and Southern China rainforest biodiversity. As the cradle of Neo-Confucianism, this region enjoys a long history and rich cultural diversity. With its outstanding cultural and natural characteristics, Mt. Wuyi serves as a great site for EABRN's regular meeting to strengthen biosphere reserve cooperation within the East Asian sub-region, and in promoting sustainable development while protecting nature and biodiversity.

The 11th EABRN meeting was organized jointly by the UNESCO Beijing Office, Wuyishan Biosphere Reserve, the Chinese MAB National Committee and the Chinese National Commission for UNESCO. Over one hundred and fifty participants attended this conference including twenty six international participants from six EABRN member countries as well as Indonesia and Vietnam.

The main theme of the meeting was "Implementation of MAB's Seville Strategy and Madrid Action Plan for Biosphere Reserves". The meeting was opened by Prof. Xu Zhihong, the Chairperson of Chinese MAB National Committee, Mr. Han Qunli, Director of UNESCO Tehran Office and Dr. Fang Maotian, the Secretary General of Chinese National Commission for UNESCO with the various Provincial and Central Government stakeholders in attendance. In total, there were five technical sessions including country case studies and other technical sessions related to MAB.

The meeting report was done by the EABRN Secretariat, UNESCO Office Beijing. UNESCO Beijing organized an Ad-Hoc meeting with MAB National Committee secretaries from six countries and representatives from the Korean National Commission for UNESCO. During this meeting various issues related to EABRN project activities were discussed and the following decisions were made: 1) Possible venue of 12th EABRN meeting, 2) 4th EABRN Training, 3) the EABRN project secretariat shall prepare the detailed plan, 4) the government of ROK confirmed their continuing financial support to this initiative and requested UNESCO Office Beijing to prepare the workplan for 2010-2011.

The 11th EABRN meeting included a one-and-half day field visit and field visit evaluation of Wuyishan BRs. Based on observations during the field visit, the international members provided various comments and suggestions on the improvement of Wuyishan BRs during the field visit evaluation discussion session. The directors of the Wuyishan BRs and Chinese MAB Committee agreed on the evaluation comments and announced their commitment to the implementation of the suggestions at their earliest opportunity. They also expressed their appreciation for the international experts' free and fair evaluation of the reserves.

On the final day, a declaration from all the participants was released as the Wuyishan Statement and is included in this report.

The participants of the 11th EABRN Meeting expressed their sincere gratitude to the Chinese National Commission for UNESCO, China-MAB National Committee for hosting the meeting. They further extended their thanks to the Korean National Co1mmission for UNESCO and the Ministry of Environment for its continuous technical and financial support to the EABRN. Lastly, the meeting thanked UNESCO Beijing Office for its coordination and organizational contribution to EABRN activities.

This report was edited by the secretariat of the EABRN, UNESCO Beijing Office, based on the imports and supports from all the speakers, chairpersons of the sessions and the rapporteurs of the sessions.

Sessions Summery

Opening of the Meeting

Mr. Yang Ronglan: One behalf of Nanping Municipal People's government, Mr. Yang Ronglan welcomed delegates from six EABRN countries, Vietnam, Indonesia, UNESCO, Chinese National Commission of UNESCO, China National Committee of MAB, State Forestry Administration, State Oceanic Administration, Chinese Academy of Science, Xiamen University and delegates from biosphere reserves throughout China.

Mr. Yang praised the significance of the conference, saying that it will not only allow biosphere reserves to discuss gaps, difficulties, and challenges facing the biosphere reserves within the East Asian region, but it also provides an opportunity for information exchange. Mr. Yang pointed out that such events are of great benefit to biosphere reserves as well as assisting Nanping City in the promotion of the Millennium Development Goals.

After giving background information on Mt Wuyishan Biosphere Reserves, Mr. Yang shared detailed information on the size, population, ecosystem, and culture of Nanping City. As he stated, Nanping not only enjoys rich biodiversity but is also famous for its long history and diverse culture. Mr. Yang pointed out that Nanping City has recognized the important role of the ecosystem in its development. As a result, Nanping City has implemented policies such as an ecological city strategy to achieve its goal of building an open, prosperous and harmonious ecological Nanping City.

Mayor Yang hopes that this conference will establish a platform for both Nanping City and Wuyishan Biosphere Reserve to communicate the improvement of biosphere reserve management to the outside world. He gave his best wishes to the conference in achieving its goal of better implementation of the MAB's Seville Strategy and the Madrid Action Plan in Biosphere Reserve Management.

Mr. Han Qunli: On behalf of the United Nations Educational, Scientific and Cultural Organization (UNESCO), Mr. Han Qunli welcomed delegates to the 11th UNESCO-MAB East Asian Biospherer Reserve Network (EABRN) conference. He further expressed his gratitude to Wuyishan Biosphere Reserve, Chinese MAB National Committee and Chinese National Commission for UNESCO for their excellent work in hosting and organizing the event.

Mr. Han shared in-depth background information on EABRN with the participants. He detailed the establishment of EABRN, its members, and its three priority themes; eco-tourism, conservation policy and trans-boundary conservation. He reiterated EABRN's main functions as facilitating information exchange, BR capacity building and site-to-site training. To emphasize the function of information sharing, information dissemination and biosphere reserve management capacity enhancement, he used the examples of EABRN's Atlas publication, GIS training, and remote sensing training.

Following his introduction to EABRN, Mr. Han presented the urgency and necessity of the theme of the 11th EABRN conference i.e. the implementation of the Seville Strategy and the Statutory Framework of the World Network of Biosphere Reserves and the Madrid Action Plan in EABRN. Both the Seville Framework and Madrid Action Plan aim to raise biosphere reserves to be the principal internationally-designated areas dedicated to sustainable development. Furthermore, rapid economic and social development is exerting more and more pressure on our ecosystem. Thus it has significant meaning to enlarge the biosphere reserves' contribution to sustainable development.

Lastly, Mr. Han Qunli expressed his thanks to all the countries and individuals for their continuous participation and support to EABRN. He was especially grateful to the government of the Republic of Korea for its professional and financial contribution to EABRN's development.

Mr. Fang Maotian: On behalf of Chinese National Commission for UNESCO, Mr. Fang congratulated the EABRN on its 11th meeting and greeted delegates from all over the world. He expressed his sincere gratitude to experts, managers and staff from UNESCO and other organizations that are dedicated to working for biosphere reserves.

In his remarks, Mr. Fang showed great confidence that this EABRN meeting, with its theme of implementation of the Seville Framework and Madrid Action Plan, fits not only the priority of UNESCO MAB, but also contributes to the development and cooperation of biosphere reserves within the EABRN network and beyond.

Mr. Fang pointed out the significance of UNESCO's Man and Biosphere (MAB). Established in 1971, MAB is an inter-governmental scientific programme focused on the growing challenges of population, natural resources and the environment. UNESCO greatly contributed to ecosystem and biodiversity protection through carrying out MAB programmes worldwide. The creation of the World Biosphere Reserve Network (WBRN) has expanded BRs function from the protection of biosphere reserves to also include local community development.

Mr. Fang further stated that amid increasing concern for the environment and demands for sustainable development, MAB is drawing more and more international attention. Mr. Fang cited the 35th Session of the UNESCO General Conference as an example. One of the main themes of the UNESCO General Conference was the contribution to sustainable development made by MAB and biosphere reserve networks.

Mr. Fang introduced China's position on MAB, and its dedication and contribution to MAB programmes. China has been actively supporting and participating in MAB since 1979. 28 Chinese natural reserves have been integrated into the WBRN. Meanwhile, the Chinese Biosphere Reserve Network (CBRN) has grown into a network of 136 members. In addition to the growing number of China's Biosphere Reserves, China promotes activities within the network of WBRN, particularly in EABRN. China has carried out broad cooperation and communication with its neighbouring countries. While learning from others, China has generously provided strong support and help to other developing countries in their biosphere reserves efforts.

Mr. Fang finished his remarks by emphasizing the urgency and necessity of achieving harmony between ecosystem protection and human development. Mr. Fang acknowledged the importance of rich biodiversity as well as the growing pressure on the ecosystem from rapid population growth and economic development. In serving as a communication platform, the EABRN meeting has greatly enhanced information exchange and cooperation. It plays a significant role in strengthening and improving biosphere reserves' work in this sub-region. He expressed great faith in the conference and offered his best wishes for its success.

Mr. Su Ronghui: Mr. Su congratulated the opening of the 11th EABRN meeting and the 11th session of CBRN meeting. Mr. Su underlined China's commitment to natural reserves. China opened its first natural reserve at Ding Hu Mountain in Guangdong Province as early as 1956. In 1978, China joined UNESCO's MAB programme and established Chinese National MAB Committee. China's Academy of Science (CAS) coordinates among China MAB members. Based on MAB's principles, CAS carries out activities in China.

Mr. Su further outlined the achievements of China MAB since its creation. China MAB made great progress in biodiversity, cultural, and social protection. China MAB carried out effective work in study, education, and training in the fields of sustainable development and ecosystem protection. It plays a crucial role in promoting

sustainable development in China. Mr. Su was delighted to see that biosphere reserves are developing rapidly in China. Mr. Su was delighted to witness 28 Chinese Natural Reserves joined UNECO MAB and the Chinese Biosphere Reserve Network (CBRN) has grown into a network with 136 members.

Mr. Su pointed out that the East Asian region faces simultaneous development opportunities and challenges. This biennium meeting successfully serves as an information and experience sharing platform. It is a great way to combine the forces of EABRN members to leverage resources and tackle sub-regional challenges together.

Based on the Seville Framework in 1995, MAB's Madrid Action Plan was adopted in 2008. The Madrid Action Plan is dedicated to enhancing MAB's contribution to sustainable development. Mr. Su presented CAS's commitment to further support MAB activities, and to assist in the implementation of the Madrid Action Plan. Finally, Mr. Su wished great success to the meeting.

Prof. Dr. CHOI Chung-Il: Prof. Choi congratulated Chinese MAB National Committee and Wuyishan Biosphere Reserves in opening of 11th EABRN and CBRN combined meeting. Prof. choi remembered from the Third World Congress on Biosphere Reserve (WCBR) in Madrid, Spain early last year, the climate change was identified as one of the most serious and globally significant challenges in all levels of society and of course various ecosystems around the world today. The congress resolution supported that the Madrid Action Plan (MAP) shall be implemented to biosphere reserve (BR)s through most efficient and successful conservation strategies in various and possible ways and means.

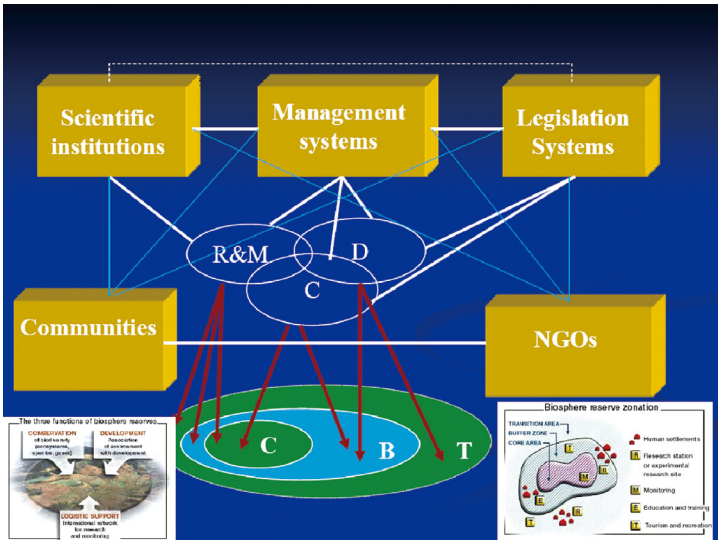
He pleased that our 11th EABRN Conference will be discussing on the theme of "Implementation of MAB's Seville strategy and MAP", and this will cover as was identified in the invitation letter as well as conference brochure in terms of HOW to implement and HOW to develop various and some issues in conservation policies, ecotourism, capacity building, linkage between culture and diversity then furthermore trans-boundary biosphere reserve(TBR) conservation and finally sustainable development(SD) with other related issues. Prof. Choi noted that the BR is a kind of protected area (PA) although it is different from other more popularly and commonly recognised PAs such as Ramsar sites and World Natural Heritage sites. It is because MAB Programme emphasises man's role, activity and subsequent impact on BR. This makes the MAB Programme can achieve conservation as well as the human side of SD. This is why the programme becomes very attractive for the future road way to environmentally sustainable world we have to pursue.

Last 21st ICC Meeting held in Jeju, Korea which was for the first time held outside Paris unanimously adopted to create a global and thematic network of Island and Coastal BRs contributing CC and SD under auspices of Spain and Republic of Korea (ROK). This will allow us quite a few island and coastal BRs of EABRN can join, cooperate and accomplish various aspects of the MAP. Last Prof. Choi expected that this conference will contribute to our BRs' future prospects under the MAP implementation for sure.

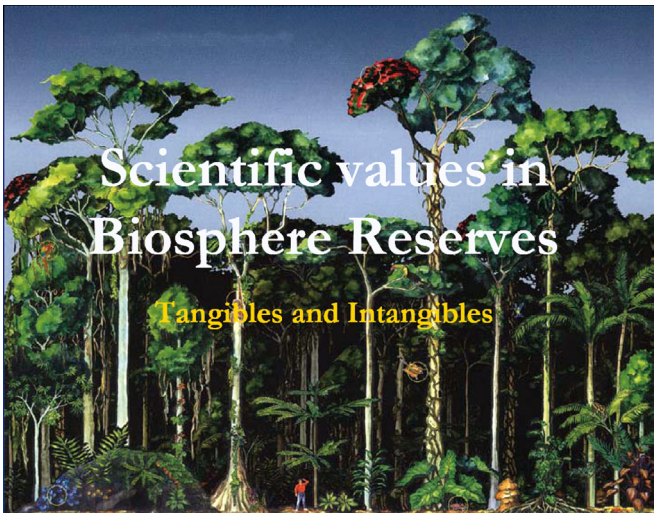
Session 1: Presentations about progress of the MAB programme and the BR issues

Chair: Dr. Valery Neronov, Vice-Chairman MAB-ICC

Mr. Han Qunli: Biosphere Reserve Development in Asia-Pacific: main lessons learnt since Seville with comments on the implementation of Madrid Action Plan



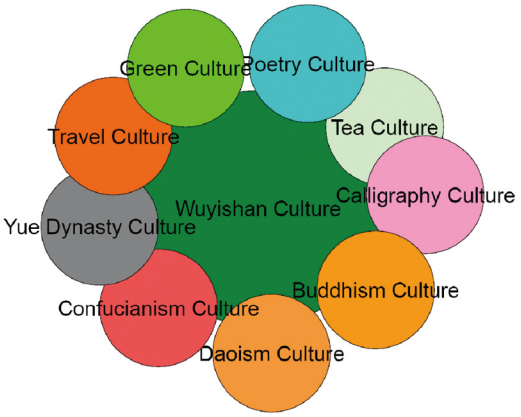
Four main goals of Seville Strategy in managing Biosphere Reserves; out of 90 total recommendations of Strategy 60 of them refers the cooperation at national and site level. Madrid Action Plan consists of 4 main areas of interests with number of targets and actions globally, regionally, sub-regionally, nationally and site specific. Even thong global and regional actions facilitate the local governments and site management committees play an important role. He reported 8 main lessons learned from Asian region in managing biodiversity and biosphere reserves. He insisted that Biosphere Reserve zonation system more dynamic/diversified in practice zonation will not work if failed to understand who are the stakeholders an partners Local governments and local communities have growing roles in the course of conservation/development.



The profile of WNBR in terms of representativeness and coverage must be improved; the same was indicated with various examples from Asia. Ecosystem Integrity vs Fragmentation a central consideration need for transboundary cooperation to be promoted and explored, but progress slow and difficult as it has lot of political implications need to have more patience. Need to have special recognition of values of rehabilitated ecosystems Freshwater ecosystems should get more attention in order conserve biodiversity. He insisted that the important role of regional, sub-regional and national networks. And also there is a need to understand values of sites a long and evolving process, especially in Asia cultural diversity is inseparable from biological diversity need to go hand in hand if we want to succeed in all our efforts this is the most important part. Also he suggested to take more national and regional research for the impact of climate change in the biodiversity.

Li Zhenji: Biodiversity Conservation and Economy Development at Wuyishan Region: Background for Implementing Madrid Action Plan at Locals

Dr Li gave a presentation on the current background of economic development of the Wuyishan region; the cultural background of Mt. Wuyi regional development; the conflict between protection and development; principles for resolving conflicts of community development; the experience of Wuyishan Nature Reserve

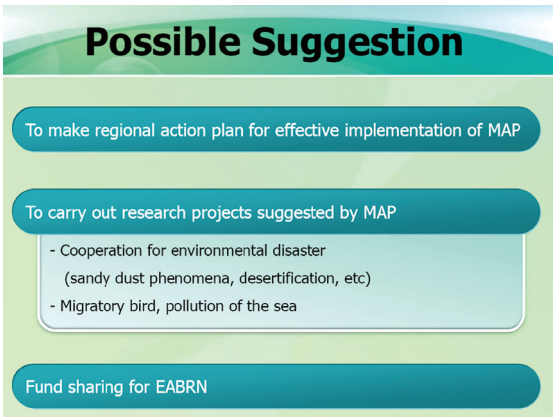


Dr Li concluded his presentation by stating that Wuyishan Nature Reserve is a rich example of China's protection of the biosphere and of human development. Wuyishan Nature Reserve benefitted from the historical influence of Confucianism and tea cultivation, leading to a thirty-year development of scientific research, promotion of popular science, utilization of bamboo resources, black tea cultivation and more. He expressed his hope that the protection of biodiversity would carry on, and that the harmonious coexistence of the human and the natural worlds ("whole world model") would continue.

Prof. CHOI Chung-Il: Implementation of Madrid Action Plan and EABRN

Prof. Choi provided the detailed information of MAP and its implications at ground level in managing BRs even thong his presentation titled for EABRN he explained the case of ROK in implementing the MAP.

- Time frame: 2008-2013
- 4 Main action areas
  - o Cooperation, Management and Communication
  - o Zonation – Linking Functions to Space
  - o Science and Capacity Enhancement
  - o Partnerships
- Responsibility for action
  - o International level
  - o (MAB secretariat, MAB regional Networks, MAB sub-regional Networks)
  - o National level(MAB National Committees, National Commissions for UNESCO)
  - o Local level(Individual BRs)



- In addition he report salient aspects of 21st MAB ICC meeting at Jeju Korea.
- It was suggested that the work on Quality economies in BR
- Attention to the need for management committees at the individual BR level.
- To integrate the BR concept into the national legislative instruments and processes.
- To prepare a list of pre-Seville sites and an assessment

of the number of sites in that set which are unlikely to be re-designed to meet the Seville and MAP expectations.

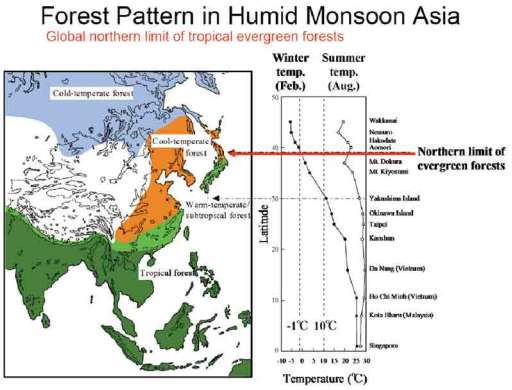
- The biosphere nomination and the periodic review forms required simplification and revision.
  - o from 10 to every 4-6 years
  - o Council members proposed that a time-limit for periodic reviews- a five-year interval
- with one year margin must be prescribed in the Statutes
- The promotion of BR as learning platforms and places for sustainable development.
- The first evaluation of MAP in 2010
  - o Secretariat to submit a progress report to the 22nd session of the Council
- Requested the Secretariat to make a comparison between 2004 and 2009 (number, areas, budgets)
- The age limit of MAB Young Scientists Award shall be fixed at 40years of age for all applicants
- To create a Global Network of Island and Coastal BR Contributing to Action on Climate Change and Sustainable Development (ROK & Spain)

Prof. Choi further suggested that for effective implementation of MAP it should be translated to regional level; further extend the research in relation to environmental disaster, climate change, migratory birds and sea pollution etc; requests members from share the funding for EABRN activities.

Session 2: Presentation and Discussion about the MAB programme and BR issues within EABRN

Chair: Prof. Wang Ding, Secretary General Chinese MAB National Committee

Dr. Masahiko Ohsawa: MAB Biosphere Reserve Network – a tool for large scale conservation of biocultural diversity



- Four biosphere reserves in Japan are in different eco-regions
- Described about forest patterns and zones present in humid monsoon Asia
- The summer hear and winter cold are the two main controlling factor ecosystem distribution along latitudinal gradient
- Temperature rise in winter (DJF) is more pronounce in higher latitudes
- Reported the scenarios Climate Change and Potential Vegetation Changes in Japan and also specific change to the four biosphere reserve in Japan
- Some forest zones peculiar to East Asia are critical/endangered through global warming: Critical Ecotonal Zone between tropical and temperate zones.
- It needs to establish protected area/reserves covering the possible shift of vegetation zonation on mountains: Altitudinal Reserves.
- Explained the cultural values of mountains in Japan and its relation to ecological conservation, how the people belief could be converted to conservation
- Most of the reserves are related to mountain/sacred sites since ancient time in Japan: Sacred Sites.

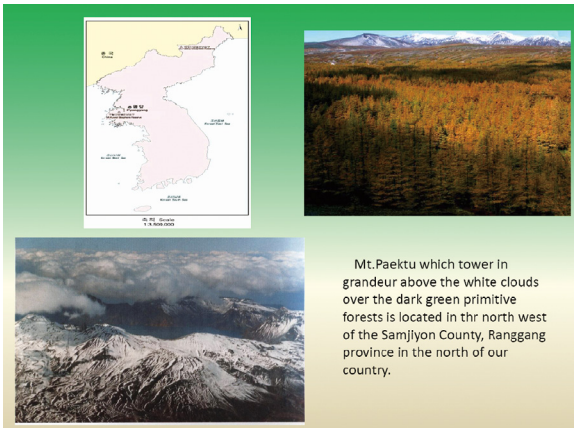
Dr. Valery Neronov: The results of 21st ICC of MAB session important for strengthening cooperation among EABRN members

- Special attention of the session's participants was called to the information derived from a questionnaire survey on the assessment of the achievements of the Seville Strategy as required by MAP target 1 and action 1.1.
- Communication is critical for the WNBR and can be significantly improved. The Council welcomed and adopted the integrated strategy for communications and the clearinghouse mechanism, which aims at increasing the visibility of the WNBR, improving the access to information for biosphere reserves and facilitating interaction between biosphere reserves. In this regard EABRN is pioneer in communication strategy prepared several information document with good quality information, he wish it could be continued
- The council approved 22 new nomination to the WNBR which included 3 new nomination from EABRN and with the total of 553 BRs in 107 countries around the world
- In view of the importance of economic issues of biosphere reserves, it was suggested that the work on quality economies in biosphere reserves be reinforced and the development of statutory frameworks for regional networks of biosphere reserves be given due consideration in efforts to review and update that of the WNBR.
- MAB Committees to collect information on the extent to which the biosphere reserve concept is included in national legislation frameworks, the Council requested the Secretariat to make information available from different countries that have incorporated the concept of biosphere reserves into the national legislative instruments and processes.
- The Council adopted the recommendation of the Bureau that both the biosphere nomination and the periodic review forms required simplification and revision.
- The MAB-ICC decided that the age limit of candidates for the MAB Young Scientists Award shall be fixed at 40 years of age for all applicants; to be eligible for the MAB Young Scientists Award

The full report is available at MAB website for members consultation

Mr. Ri Yong Jin: Study on the succession of large forest in Mt. Paekdu Biosphere Reserve area

Mt. Paektu, which tower in grandeur above the white clouds over the dark green primitive forests, is located in the north-west of the Samjiyon County, Ranggang Province in the north of our country. Mt. Paektu is coincided with the purpose of comparative study of MAB as it represents the sub-alpine forest ecosystem in the north area of DPR Korea. It is located in the area facing Paektu Peak centering on Mt. Paektu in the northern part of Korea. On 29 April 1946, it was designated as Mt. Paektu Plant Reserve by "Decree for the Conservation of Treasures, Archaeological Site, Scenic Spots and Natural Monuments" adopted at the North Korean Provisional People's Committee. On 25 March 1959, it became the Mt. Paektu Nature Reserve by Cabinet Decision No.29.



In 1976, 14,000 ha in the central area of Mt. Paektu were designated as nature reserve by Decision of Administrative Council No. 55. In 1985, it was designated

15,880 ha in battle site district as Mt. Paektu Special Reserve. In 1989, 132,000 ha were nominated as a UNESCO MAB Biosphere Reserve signaling the progress of its biodiversity protection under the worldwide concern. The total area of the biosphere reserve is 132,000 ha, which includes 24,000 ha of core area, 36,000 ha of buffer zone and 72,000 ha of transition area. Mt. Paektu Biosphere Reserve stands on the top position in biodiversity conservation of North-East Asia as it is bordered with Changbaisan BR of China. Lake Chon, a crater lake, is a large type of its kind in the world, 9,365 km2 in area and 384 m at the deepest. The lake is hemmed in by a screen of peaks at least 2,000 m high above sea level, notably Janggun (2,750 m), Hyangdo (2,721 m), Ssangmujigae (2,626 m), Haebal (2,719 m), Tangyol (2,661 m), Jebi (2,549 m) and Rakwon (2,603 m) peaks. Topographically speaking, Mt. Paektu is divided into a vast lava area at its foot, masses of flagship peaks and the lakeside basin. The climate of Mt. Paektu is typically alpine-coldest in Korea, highly capricious and with complicated phenomena. The Average annual temperature is -3.4 ~ -7.8℃ at the top of Mt. Paektu above Mudu Peak (altitude of 1,900 m) with strong wind, rain and snow. The average annual temperature on Janggun Peak is -7.5℃, the lowest in Korea, and the temperature becomes 0.6℃ lower by every 100 meters higher above sea level. The average monthly temperature is the lowest in January and the highest in July. The highest temperature of the hottest month is 21.9℃ and the lowest temperature of the coldest month -26.2℃. The average annual precipitation is 1,100…1,373 mm and the duration of rainfall is 200 days. At Sobaeksu valley, the average annual temperature is -2.2 ~ -5.0℃, average annual precipitation is 957.3 mm. It often rains and foggy. Samjiyon Lake and its adjacent plateau has -0.6℃ (-0.4~1.0℃) of average annual temperature and 921.5 mm of average annual precipitation.

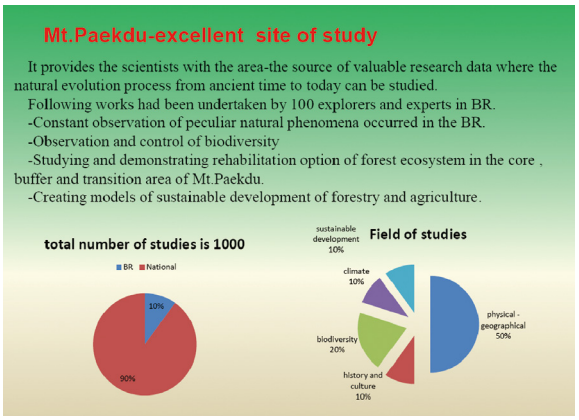
The core area is strictly protected forbidding the entrance of all organizations and peoples while the buffer zone allows only for scientific research and monitoring. Mt. Paektu area has the Revolutionary Battle Sites and Revolutionary Relics and esp., Samjiyun area, built as the great open museum, has great social, political, historical and cultural significance. About 200,000 adolescents visit the Revolutionary Battle Sites every year. Among them, 150,000 climb up Mt. Paektu Core area. Nearly the same number of young students and workers also explore the Revolutionary Battle sites in the buffer zone around Samjiyon, Begaebong and Chongbong Core Areas, every year. Trainings and field observation exercises for students and experts have been held in Mt. Paektu Biosphere Reserve two times every year. The Paektu exhibition hall, which was established in 2007, has contributed for visitors to learn about Mt. Paektu. The exhibition hall has model board and a reading room that show issues in history, culture and social aspect of Mt. Paektu Biosphere Reserve and provides some service facilities for visitors. The exhibition hall makes it possible for visitors to get the detail understanding about the Mt. Paektu Biosphere Reserve and issues in field observation. Field observation in Mt. Paektu Biosphere Reserve will help students and children under 15 years old to have actual views about a lot of plants and animals and will help adults to earn the understanding on the ideal natural environment of human life and on its importance and to make their efforts for conservation and creation of BR. And also, it provides the scientists with the area-the source of valuable research data where natural evolution process from ancient time to today can be studied. Following works had been undertaken by about 100 explorers and experts in BR.

The exhibition hall has model board and a reading room that show issues in history,culture and social aspect of Mt.Paekdu Biosphere Reserve and some service facilities for visitors.

- Constant observation of peculiar natural phenomena occurred in the BR
- Observation and control of biodiversity
- Studying and demonstrating rehabilitation option of forest ecosystem in the core, buffer and transition area of Mt. Paektu

• Creating models of sustainable development of forestry and agriculture

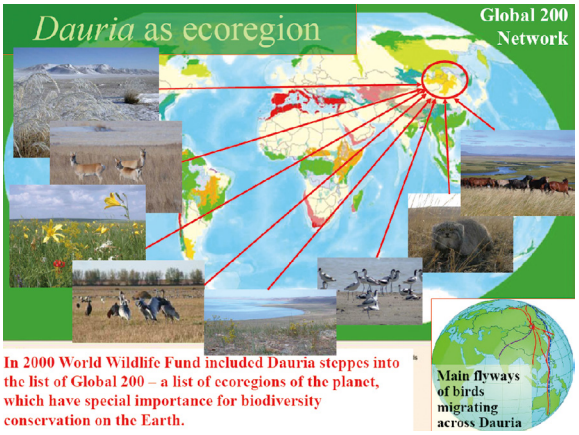
Data surveyed/studied to date shows, the reserve includes 830 species of higher plants over bracken, 270 of bryophyte, as well as over 190 of lichens, 370 of fungi and 160 of algae. Magnoliophyta is the major in composition of species of higher plants over bracken growing in the biosphere reserve (753 species, approximately 90.2%). It includes about 60 species of high trees, 90 of shrubs and 680 of grasses. Most of the plants are the alpine plants, adapted to the natural climate of high mountain areas. As for fauna, there are 49 species of beasts such as tigers, bears and deers and about 140 species of birds and 90 species of butter flies. There are 1000 papers about Mt. Paektu up to now; it occupies 10 percent of total national papers in environmental fields. It shows that the Mt. Paektu Biosphere Reserve is excellent learning site as representative. Among papers, 50 percent are the studies about physical geographical feature of Mt. Paektu, 10 percent-about climate, 20 percent-about biodiversity, 10 percent-about history and culture, 10 percent-about sustainable development. Representative studies are "Study of Stock for Conservation around Mt. Paektu", "Study of Evaluation and Conservation of Sightseeing Resource of Mt. Paektu", "Study of Evaluation of Ecosystem and Biodiversity by Using RS and GIS in Mt. Paektu", "Monitoring System about Natural Damage by using RS" and "Succession of Forest Ecosystem in Mt. Paektu Biosphere Reserve". The most interesting study is Succession of forest Ecosystem in Mt. Paektu Biosphere Reserve. The application of index of dominance, diversity and probable species diversity which had been used in assessing forest succession of community type series is not suitable for interpretation of forest succession. It was found that the method of Geographic positioning of forest types in succession series by using the new DFS value, is most considerable. The succession is the larch forest ecosystem has been developed in the direction of the mixed forest of larch+white birch larch+white birch+aspen the pure forest of larch larch+picea+abies. Such as the study is only possible in Mt. Paektu Biosphere Reserve that has long history and natural situation. And publications were published such as "Mt. Paektu Biosphere Reserve" and "album of Mt. Paektu Biosphere Reserve", so that they contribute to the education of Mt. Paektu Biosphere Reserve. Mt. Paektu Biosphere Reserve will be fully implemented as learning site by applying the advanced technologies and modern facilities to the management, international cooperation and positive actions of DPR Korea.



Dr. Valery Neronov: The prospects of China-Mongolia-Russia International Protected Area in Dauria ecoregion as a model for implementing recommendations of the MAB Programme for transboundary Cooperation

Daurian steppes are a vast region situated on the junction of the borders of three states – Russia, Mongolia and China. Among the Central Asian steppes Dauria is distinguished by the peculiarity of climatic conditions, relief, vegetation and wildlife.

Daurian steppes is the example of well-preserved terrestrial ecosystems of Central Asia, they have key significant for conservation world biodiversity. In the Dauria ecoregion and Dalainor-Torey hollow migration route of many bird species is narrowed, it is the so-called “bottleneck”. Almost 360 bird species including representatives of mountain-taiga and tundra complexes stop in Dauria during their flight or nest, 25 species of them are put into IUCN Red Data List as globally vulnerable or endangered. Among them 4 species of cranes



In 2000 World Wildlife Fund included Dauria steppes into the list of Global 200 – a list of ecoregions of the planet, which have special importance for biodiversity conservation on the Earth.

(Siberian crane, Japanese crane, White-naped crane and Hooded crane), Great Bustard, Swan Goose, Baer`s pochard, Baikal teal, Relict gull, Asiatis dowitcher. For many species Dauria steppes are key habitats (for example: in region inhabited near 13 % of world population of Red-Crowned crane, 80% - of Swan goose, 66% - of Great Bustard, 29 % - of White-naped Crane etc.). More than 90% of world population of Mongolian gazelle inhabited Daurian steppe too.

For conservation of unique ecosystems and biodiversity of Dauria in 1994 the official Agreement between Russia, Mongolia and China on creation of a joint protected area (Russiain-Mongolian-Chinese Dauria International Protected Area) in the near-border regions of the three countries was signed. Three national reserves was included to this international protected area: Daursky (Russia), Mongol Daguur (Mongolia) and Dalainor (China).

The main tasks of joint reserve are researching of Dauria nature, monitoring, environmental education and cooperation in protection of rare species. Other important task – to promote of environmental cooperation between 3 countries. Since the moment of the transboundary reserve foundation totally more than 70 joint scientific research expeditions have been held. By now investigations have covered about 300,000 sq. km including spacious flowless steppe area and nearly all the upper part of the Amur basin from it sources to the Great Khingan. Wild scientific works revealed some features of Darian ecosystems functioning. Of special importance for Dauria is alternation of wet and drought climatic periods that causes considerable change of distribution area and exterior of the ecoregion vegetation and wildlife. The most significant cycles within a century have the duration of about 30 years (from 25 to 40).

But the changes in floodplain of big river are slow and not so critical. Because of that the big rivers (such as Onon, Hailar-Argun, Kerulen) has key significance for water birds, migrants and breeding in Dauria species. Thus spaced sites in Dauria have close relationship between it other. It makes little sense to protect one single wetland cluster in the Daurian Ecoregion, since most of the area's wildlife migrates among the steppe's scattered wetlands according to 30-year drought cycle patterns.

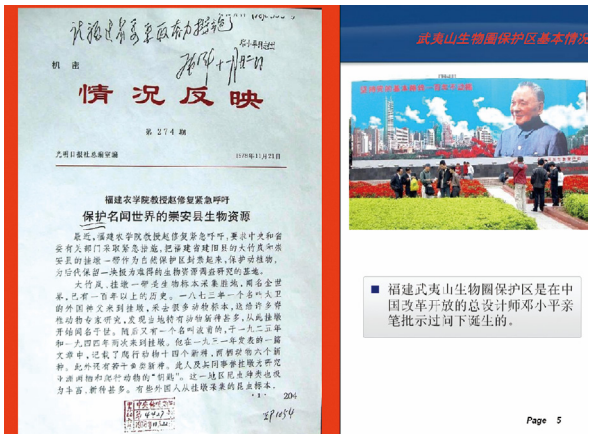
The issue of creation the TBR on the basis of DIPA has been discussed for more than 5 years. Particular attention was paid to it at the last meeting of the Joint Commission on International Reserve - the highest governing body of the trilateral reserve. Today, all part of the international reserves is the biosphere reserve. Successes of environmental, scientific, and educational cooperation are real and proven. Research of the reserve's staff provides the necessary information and basis for making management decisions in the field of environmental management. Combining all three part of DIPA into single transit zone, we can create a real area of Cooperation at the junction of three countries. This zone provides realization of the principles of sustainable development and the major ideas of the MAB program - a compromise between the interests of socio-economic development and conservation of wildlife in the region.

The first necessary step is enlarging of the DIPA territory to protect of most important biodiversity conservation areas. The most perspective direction is creation new joint parts. There are Lake Buir-Nur (Chinese-Mongolian border) and the wide valley of the river Argun (Russia-China border).

Session 3: Presentation and discussion of BR cases
Chair: Prof. Kim Kwi-Gon, Vice-President MAB National Committee ROK

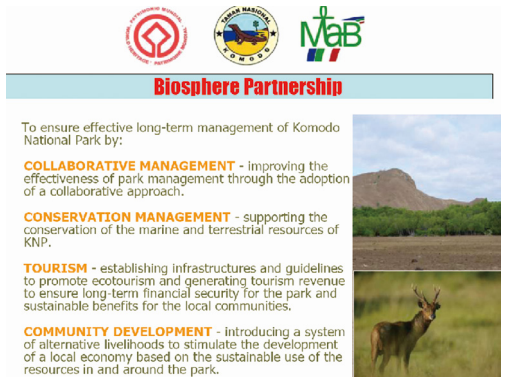
Mr. Tang Zhong: Wuyishan Biosphere Reserve as a learning site for sustainable development: harmonization of the relationship between 10% development and 90% protection

- About Wuyishan Biosphere Reserve
- Harmonize conservation and development
  - o Challenges of the conflicts between BR reserve and improvement of the livelyhood of 2,500 locals living within Wuyishan BR and over 10,000 in surrounding counties and villages.
  - o It is unrealistic to relocate all the habitants in the BRs so Wuyishan BR is implementing using 10% of the BRs to realize 90% of reservation of Wuyishan BR. In other words, Wuyishan BR allows the usage of 10% of BR to provide enough for its local people so 90% of Wuyi BR is preserved.
- Government support
- Baboo production and economy
- Tea plantation and economy
- Forestry subcidize
- Bee industry
- Joint conservation and its boost to community development
  - o Engagement of local community
  - o Legal capacity building for Joint conservation
  - o Participance of local people
  - o Training local people to prevent forestfire
  - o Establishment of coordination and mediation institutes
  - o Great achievement of forest fire prevention
- Science research and its promotion to community development
- Enhancement management and service improve the effect of conservation and development



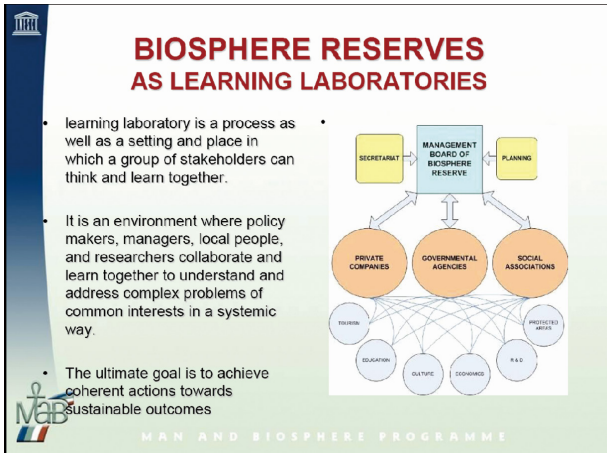
Mr. Tamen Sitorus: Implementation of MAB Seville strategy and Madrid Action Plan in Komodo Biosphere Reserve, Indonesia

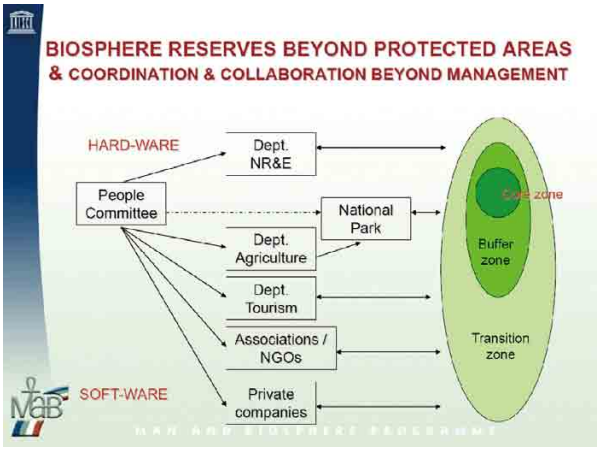
- Komodo Biosphere reserve is located at oceanic crossroads between Indian and Pacific Ocean
- He explained the history of the Biosphere Reserve as follows: The first Established as National Park in Indonesia, 6 March 1980; listed as Man and Biosphere Reserve by UNESCO in 1986; listed as World Heritage Site by UNESCO in 1991; Komodo dragon was listed as a national symbol by the President of the Republic of Indonesia in 1992; listed as Marine Protected Area in 2000; listed as one of National Park models in Indonesia in 2006; proposed to be 1 of 5 National Park self financing in the year 2010; official finalist New7Wonders of Nature 2009
- Major threats under marine part as unsustainable fishing and at terrestrial environment Poaching of Komodo's prey; fire (because of poaching); human encroachment; invasive species (cactus); differential interest
- The management goal of Komodo is to protect its biodiversity (particularly the Komodo dragon) and breeding stocks of commercial fishes for replenishment of surrounding fishing grounds.'
- Explained the biosphere partnership such as collaborative management; conservation management; tourism; community development
- Komodo acts as learning site the activities sofar tterrestrial Monitoring Training - San Diego Zoo; marine monitoring training; 3-D reef mapping technology training; ppublished standard operating procedures; various community training programs (guide, ranger, handicrafts, tourism business etc)
- Success indicator for any reserve is: "if local people reap benefits from biosphere reserve, they will eventually be the best guardian of the protected area, since their livelihood is at stake"
- Touched up the policy initiatives to adapt climate change



Dr. Nguyen Hoang Tri: Lessons learnt from using system thinking for development of biosphere reserves, Vietnam

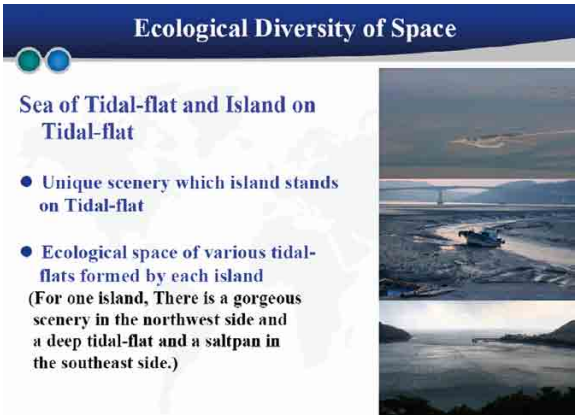
- The diversity of biospheres in the Vietnam provides an opportunity to conduct many context-specific experiments in sustainable development at varying scales
- In this way, it creates a network of learning laboratories to the benefit of sustainable development, learning and practice for present and future generations
- Learning laboratory is a process as well as a setting and place in which a group of stakeholders can think and learn together; it is an environment where policy makers, managers, local people, and researchers collaborate and learn together to understand and address complex problems of common interests in a systemic way.
- The ultimate goal is to achieve coherent actions towards sustainable outcomes
- Biosphere reserve as a 'practice field' for group learning and experimentation; enabling managers and other stakeholders to experiment, test their mental models (assumptions, values, understandings) & to anticipate the consequences of their actions, policies, and strategies
- This process of 'group think' has been instrumental for collective learning, consensus building and alignment of thoughts and actions and it is instrumental to have an overall picture of the system to show the interconnectedness and roles of various players and agencies and their impacts. The systems model represents a 'big picture'

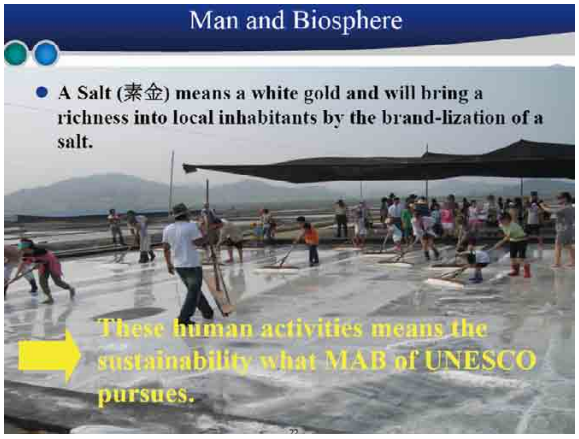




Prof. Hong Sun-Kee: Natural resources and human activity of Shinan Dahohae Biosphere Reserve, Republic of Korea

- Shinan Dahohae Biosphere Reserve is one of the new addition to the WNBR
- SDBR was designated as a Biosphere Reserve on May, 26, 2009 and this is the third designation in Republic of Korea.
- Eco-zone consisted by islands and tidal-flats: Shinan County has more than 1,000 islands, which are covered with tidal-flat. SDBR has very unique geographical and ecological diversity by the difference between the rise and fall of the tide.
- SDBR contains the adaptation of human being to complex ecosystem of sea, tidal-flat, land, and the unique culture by the adaptation.
- SDBR is a synthetic model about ecological culture resources to show the harmony with human and nature as a traditional fishing activity based on indigenous knowledge.
- The cultural scenery combined with human being's adaptation; windbreak stone wall, 'Woosil'
- The announcement by National Park Migratory Birds Center (Feb., 18, 2008) "Migratory birds passing over Hongdo are 337 species and the number is equivalent to 76.2% in S. Korea."
- Local inhabitants' techniques for Life Business based on indigenous knowledge show a human's cultural adaptation for marine and tidal-flat environment.
- Human's activities for living is to preserve nature. (ex: octopus fishery)
- SDBR established SDBR Management Committee on June, 2009 and consists of local governments, academic institute, NGOs and the leader of local inhabitants, and Korean MAB committee.





- The local governments will do their best to make SDBR as a successful model in the world.

Field Visit – Wuyishan Biosphere Reserves:

A special session was held to assess and discuss the field visit of Wuyishan BR. Mt. Wuyi BR field visit trip took place on the 12th and 13th of November. Participants visited a biosphere education site at Peach Blossom Valley, a Bamboo cultivation demonstration site, a company producing Lapsang Souchong black tea, Natural Museum, Education Hall, Man and Nature Harmony sculpture, Subtropical Forest Monitor Station and Nine Bend River.

Peach Blossom Valley

The first stop on the field trip was Peach Blossom Valley, a site for research institutes, universities, and schools to carry out ecological research and educational activities. Peach Blossom Valley, covering an area of 20 hectares, has abundant sub-tropical forest vegetation. Its wide-leaf forests provide fresh forest air with rich anion oxygen. The journey to the Valley starts from the Peach Blossom Valley Suspension Bridge. Sitting 25 metres above the bottom of the valley, it spans a distance of 120 meters and connects to an ecological education trail. Along the trail, visitors are able to see the greatly diverse flora and fauna (with sign-posted information) of a typical Southern China Forest. Due to the beautiful scenery and outstanding biodiversity, the Wuyishan BR Bureau has developed this area into an important educational site to spread knowledge of forest ecological systems, nature reserves and environmental protection.

Sculpture

After Peach Blossom Valley, participants visited the Wuyishan BR's themed sculpture; "Man and Nature in Harmony". The sculpture is comprised of two animals, a tiger and a cow. The tiger represents animals in the wild and the cow animals tamed and domesticated. The two animals lean against each other and form into the Chinese Character for "human". The sculpture symbolises the main theme of Wuyishan BR; the protection of nature while realising the harmony between the natural and human worlds.

Lapsang Souchong Black Tea Houses

The Wuyishan area has a long history of producing black tea. Invented in Wuyishan in the 17th century, Lapsang Souchong Tea was the first black tea produced in the world. Through the Wuyishan BR's dedicated efforts, tea cultivation and production has evolved into a supporting industry which generates income for the BR's local population. Supporting the tea industry in the experimental area of the Wuyishan BR is an important method this BR uses to balance the sustainable economic development of local communities with bioshpere preservation. After visiting two local tea companies - the Junde Tea House and Yuanxun Tea Company - participants watched a documentary on the history of the unique Lapsang Souchong tea, learned its production process, and experienced a tea ceremony for various types of black tea.

Dazhulan Bamboo Experimental Site

Dazhulan Bamboo Experimental Site covers an area of 2400 hectares in the experimental area of the Wuyishan BR. The Wuyishan BR has been applying organic cultivation methods in this area since 1987. Organic cultivation, together with other scientific and innovative methods, has significantly increased the growth yield of bamboo forests in this site from 97 bamboo stalks per mu to 747 stocks per mu. The average diameter of the upper end of the bamboo stalks has increased from 0.31 meters to 0.42 meters. Bamboo cultivation has

been the main source of local income since the 1990's. The successful methods of bamboo cultivation in the Dazhulan Experimental Site have been applied throughout the 5,000 ha of bamboo forests in Wuyishan BR's experimental area, and have greatly increased the income of the local population. Participants visited an area of the Dazhulan Bamboo Experimental Site, while experts from the Wuyishan BR Bureau explained the character of the forests as well as many bamboo cultivation methods and their successful results.

Wuyishan Nature Museum

Wuyishan Nature Museum was opened to the public in December 18th 1990. It contains five sections; the Nature Hall, Eco-Scenery Hall, Fauna Exhibition Hall, Flora Exhibition Hall and the Achievement Exhibition Hall. This museum holds over one thousand samples of flora and fauna including rare species such as the South China Tiger and two types of butterfly.

Multimedia Centre

The Multimedia Centre opened to the public in October 2009. The centre comprises seven sections - one each for birds, snakes, insects, large wild animals, plants, history and black tea. Through video and audio documents, visitors are acquainted with the history, black tea culture and biodiversity of Wuyishan BR.

Eco-Monitoring Station

Wuyishan Subtropical Forest Eco-Monitoring Station was built in 2000. It is a monitoring and research station for the wide-leaf sub-tropical forest ecosystem. The focus areas of this station are forest carbon and water natural cycle, biodiversity, forest soil and meteorology, two measuring weirs, three catchment areas and a forest meteorological center. This centre plays a significant role in researchers' and scientists' provision of the scientific foundation for BR assessment and management.

Nine Bends River

On the last day of the field visit, participants experienced bamboo rafting on the Nine Bend River. The Nine Bend River is one of the main tourist attractions of Wuyishan city. Following a course through thirty six mountain peaks, the river has nine bends, at each of which sits an inscribed rock bearing poems of the famous Neo-Confucian philosopher, Zhuxi.

Session 4:Discussion on the field visit and summarize suggestions and recommendations
Chair Dr. Wang Ding

After one and a half days of field visits, the 11th EABRN meeting organized a field visit evaluation session. During the discussion, the participants praised Wuyishan BR's achievements in balancing the sustainable economic development of local communities with nature preservation. Participants also offered suggestions that they believe will contribute to better management of Wuyishan biosphere reserve. The experts provided a

lot of useful advice on how to further improve Wuyishan biosphere as an educational site.

Firstly, a detailed English-Chinese map that indicates the overall locations of the biosphere should be available on the trails, in the educational centre and in the museum. These maps should include the core, buffer, and experimental areas of the biosphere so that readers can have a clear idea of the overall geographic character of the Wuyishan biosphere reserve, the percentage of each area, and their locations in the biosphere.

Secondly, better signs are required both on samples in the museums and on plants in the biosphere. The experts noticed mistakes in both scientific names and in general English introductions.

Thirdly, since tea and bamboo products are two key resources of income for local communities in and around the biosphere reserve, these two products play a crucial role in realizing the harmony of natural preservation and human development. More educational materials should be available, including documentaries and exhibitions on the plantation, history, culture and cultivation of bamboo and tea. These materials should be available both in Chinese and in English.

Fourthly, awareness of the value and significance of biosphere reserves should be enhanced through education. Through informal interaction with local people, many experts discovered that although many local residents are benefiting from the reserved biosphere (in areas such as cleaner water resources, tea and bamboo plantation and harvesting within the biosphere reserve), very few of them realize the connection between the improvement in their living standards and the biosphere reserve. The biosphere management team can work with local communities to improve the awareness of the biosphere reserves among local people.

Lastly, the biological localisation observation and research station needs to be better equipped. Many publications are listed at the station. It would be much better if the titles, tables of content and abstracts are available in English so that non-Chinese speakers can access the studies of this research centre. This can dramatically enhance information sharing and increase the scope for opportunities in international cooperation. Also, a botanical garden that includes key and native flora of the area could serve as a great learning site.

Suggestions for Biosphere Reserve management include carrying out a study on the impact of feeding wild animals which is a common practice in the biosphere. Proper measures should be taken based on the study. Second, one of the main targets of biosphere reserves is to keep it as natural as possible, especially in the core and buffer areas. However, litter boxes were in place along the trails of the field visit and they contained trash. The biosphere reserve management team should educate visitors to take their own trash bags and to completely limit their impact on the natural surroundings. Last, the biosphere reserve management team should work on the visibility / profile of the biosphere reserve.

In response to the questions and comments from the participants, the Wuyishan biosphere reserve managers made the following comments. First, the Wuyishan BR appreciates this opportunity to be able to share its experience on BR management. Second, the suggestions and comments will greatly assist the BR in identifying the gaps and in improving its work in preserving the biosphere. To illustrate, the Wuyishan BR management team has realised the urgency in enhancing international cooperation to address pressing challenges facing BRs across the world, and acknowledges that English language capacity plays a crucial role in achieving this target. Third, the Wuyishan BR will explore ways to enhance its function as an educational site for sustainable development and biosphere reserves. The Wuyishan BR believes that the compliments, comments and suggestions from the participants will significantly help the BR to improve its work.

Session 5: Country Reports
Chair: Mr. Luvsandorj Bazarragchaa , MAB Mongolia

Country Report-China-Activities of China –MAB 2007-2009: Dr. Yi Zhiyun

Through three main themes of participation, dialogue and learning, this presentation reported main activities of China MAB from 2007 to 2009. Dr. Zhijun first shared information on Chinese MAB National Committee's international cooperation including Joint Regional Seminar Ecotone-SeaBRnet 2007 and the Nineth Conference of the China Biosphere Reserves Network (CBRN)- resource leveraging, experience exchange and exploring culture's role in biological diversity conservation. In addition, the Chinese MAB National Committee organized biosphere reserves' managers to attend the 3rd World Biosphere Reserves Congress. Second, Dr. Yi reported BR nomination in China. There are two new members joined UNESCO Biosphere Reserve in China, Xingkai Lake BR and Chebaling BR. In addition, six more candidates will be nominated as BRs in 2009 and 2010. These BRs include Maoershan Reserve, Tangjiahe Reserve, Mulong Reserve, Shedao-Laotieshan Reserve, Jiuduansha Wetland Reserve, Shanghai, Talimu huyangling Reserve. Third, Dr. Yi reported periodic review of BRs in China in 2008 and 2009 including their activities, methodology and experience. Three BRs, Fengling BR, Nanji BR and Jiujiangou World BR were reviewed. Last, Dr. Yi shared detailed information on the development of CBRN, publications and policy study & capacity building of BRs in China.

Country Report-DPRK: Prof. Son Kyong-nam

In DPRK's country report, Prof. Son Kyong-nam presented DPRK MAB's activities and its cooperation with UNESCO during the period of 2008 to 2009, as well as detailed information on Mt. Myohyang BR which was inscribed as a UNESCO BR in May 2009. First, Prof. Son Kyong-nam reported the MAB's activities from 2008 to 2009. He shared in depth information on MAB National Committee's contribution to the national projects related to biodiversity conservation. In addition, he also reported the MAB National Committee's role in planning and coordinating national action based on Madrid Action Plan (MAP)

Second, Prof. Son presented MAB National Committee's cooperation with UNESCO from 2008 to 2009. In close collaboration with UNESCO, the MAB carried out the following activities. Documentary on Mt. Kuwol Biosphere Reserve to improve the visibility of BRs in DPRK was made. Furthermore, DPRK MAB committee published Atlas of Biosphere Reserve Network of DPRK and a book on biodiversity inventory and impact assessment of alien plants in DPR Korea. 2007 MAB Young Scientist Award as well as overseas training with topics of biosphere reserve management was organized.

Last, Prof. Son introduced Mt. Myohyang BR which is nominated as a Biosphere Reserve in May 2009. Prof. Song shared information on Mt. Myohyang BR zoning, geographic condition, biodiversity, culture, history as well as its contribution to conservation, development and logistics as a BR.

Country Report-Japan: Dr. Akiko Sakai

Dr. Akiko Sakai first introduced organizations related to MAB in Japan. These organizations include official organizations including Ministry of Education, Culture, Sports, Science and Technology (MEXT), Japanese National Commission for UNESCO and Japanese National Committee for MAB as well as non-official organizations of Japanese Coordinating Committee for MAB. Dr. Sakai mentioned that due to slow reaction of MEXT, MAB visibility was not satisfying.

Dr. Akiko summarized reports for BRs in Japan including two volumes of catalogue UNESCO/MAB in Japan issued in 1999 and 2007 respectively and BR Atlas Japan issued in February 2008.

Dr. Akiko went on introduced the current BRs in Japan and issues facing these BRs. As she noted, there are four BRs in Japan, Shiga Highland BR,Mt. Hakusan BR, Mt. Odaigahara & Mt. Omine and Yakushima Island. Following detailed information on the geological conditions and zoning system of these BRs, Dr. Akiko presented main challenges facing these BRs as following. All these four BRs are first generation BRs without transition areas, biodiversity is decreasing and the learning function is weak. Thus there is an urgent need to modify the BRs according to MAP and to establish transition area to improve management for areas where there are human activities.

Dr. Akiko further reported MAB Japan's focus subjects for registration of new BRs covering seeking support from both local and national governments, organizing symposium for ecologists and getting funds. To elaborate, Dr. Akiko provided details on the 57th Annual Meeting of the Ecological Society of Japan, Tokyo, 15-19 March, 2010- promoting UESCO's MAB and Japan MAB's current financial support.

EABRN Report from the Secretariat: Dr. R. Jayakumar

Dr. Jayakumar reviewed background information on MAB. First, he shared the institutional information of MAB. He continued his presentation with a brief history review of MAB. Following the history, Dr. Jayakumar went on with information of the goal and functioning of MAB.

In addition Dr. Jayakumar went on information of major networks under the framework of MAB including WNBR and major regional and thematic sub-networks in Asia. He first introduced the size, role and goal of WNBR. After reviewing major MAB network in Asia, Dr. Jayakumar focused his report on the history and current status of EABRN. Also he stressed the objective of EABRN is to contribute to the goal of MAB through strengthening co-operational activities and information sharing within the EABRN network. He reported EABRN activities including regular EABRN meetings accompanied by field visits, joint research projects, publication of books and Biosphere Reserve Atlas as well as regular regional capacity building training courses.

Session 5: Country Reports
Chair: Prof. Son Kyong Nam, President, Branch Academy of Biology, State Academy of Sciences, DPRK

Country Report- Mongolia: Mr. Luvsandorj Bazarragchaa

Mr. Luvsandorj Bazarragchaa opened Mongolia's country report with the legal structure that regulates biodiversity conservation. He briefly introduced 23 laws that make up the legal framework of legal foundation for Biosphere Reserve. In addition, Mr. Bazarragchaa introduced six international environment agreements and conventions relating to Biosphere Reserves that Mongolia has joined since 1993.

Following the legal foundation for natural reserves, Mr. Luvsandorj Bazarragchaa presented in-depth information on Special Protected Areas (SPA) in Mongolia. He presented information on the legislation on SPA, Government Resolution # 169 of 1995, the structure of SPA network and the size of total SPA in Mongolia. Additional, Mr. Bazarragchaa provided Landscape, character of biodiversity, geographic character of Mongolia's six SPAs, Great Gobi SPA, Bogd Khan Mountain SPA, Uvs lake basin SPA, Khustai mountain NP, Dornod Mongol SPA, Mongol Daguur SPA.

Last, Mr. Bazarragchaa provided insightful information on Mongolia's achievement on trans-boundry biosphere reserve protection. He specifically introduced the case of Altai Mountains. As he noted, the Altai Mountains extend along the Russian-Kazakhstan border in the northwest to the Chinese- apart from its rich biodiversity, thus the Altai Mountains' geographic character calls for trans-boundary cooperation. Furthermore, Mr. Bazarragchaa reported Monoglia MAB's activities to strengthen and promote trans-boundry BR protection. Mongolia organized a Symposium on the Trans-boundary Biodiversity Conservation providing a platform for international experts, government officials and scientists from China and Russia to discuss about this issue. The recommendation of the symposium was represented to both Mongolian and Russian government for trans-boundary PA policy making consideration.

Country Report –ROK: Ms Kim Eun-Young and Dr. HEO Hag-Young, Korea National Park Service

The Country report from ROK is jointly presented by Ms. Kim Eun-Young from the MAB National Committee of ROK and Dr. Hong from Korea National Park Service. The first part of the country report focused the activities of MAB National Committee of ROK from 2007 to 2009.

First, Ms. Kim opened her presentation with reviewing of existing BRs in ROK and introducing a new BR and nomination of BRs in ROK. After reviewing information on Mt Sorak and Jeju islands which were inscribed into UNESCO BRs in 1982 and 2002, Dr. Kim introduced the Sinan Dadohae BR approved in May 2009. Dr. Kim shared the geological character, location and local people's traditional ways of living. Following information on existing BRs in ROK, Dr. Kim reported the newly nominated BR, Gwangneung Forest. As Dr. Kim stated, Korea National Arboretum and Gyeonggi Provincial Government proposed Gwangneung Forest as a BR candidate to UNESCO. She introduced species native to Gwangeung Forest, an Eco-corridor to Demilitarized Zone (DMZ). Second, Ms. Kim reported the achievement of ROK MAB in terms of BR management capacity building. On 23rd to 24th October 2009, MAB ROK organized Expert Workshop for Establishing Management Plan of Sinan Dadohae through reviewing existing management activities and discussion of future direction of sustainable management methods for Sinan Dadohae BR.

Ms. Kim Continued the report with MAB-ROK's operation including Revision of Regulations, the establishment of the 13th committee with 19 members, regular meetings, transfer of the Secretariat of MAB-ROK from the Korean National Commission for UNESCO to Korea National Park Service in light of best use of resources. Forth, Ms. Kim reported MAB' publication and policy studies. Specifically, she introduced one publication on Inventory and review of Nature Research on Mt. Baekdu and policy studies conducted at a forum about DMZ on 27 October 2009 to promote conservation and sustainable development through making DMZ a BR.

Last, Ms. Kim shared further information on regional cooperation through EABRN. As Ms. Kim remarked, ROK Ministry of Environment has provided funds for the EABRN activities for more than 10 years to encourage best practices of BRs in this region. Furthermore, ROK Ministry of Environment voluntarily funded supporting DPRK BRs project in early 2008. Ms. Kim reported MAB ROK's international cooperation from 2007 to 2009, which includes Global network of Island and Coastal BRs, Jeju Initiative, Funds-in-Trust of US$50,000 per year to UNESCO, two international conferences of International Conference of Island and Coastal BR on Climate Change and Coastal /Island Ecosystems as well as International Workshop on Climate Change in Biosphere Reserves.

Dr. Hong from Korea National Park Service presented the second part of ROK's country report. He focused on progress and challenges of protected areas (PA) in ROK. He shared with the delegates detailed information on the status of protected areas in ROK. Dr. Hong presented management of PAs including building protected

Area systems, site based protected area planning and management, address threats in protected areas, improving the social benefits of PAs, creating an enabling policy environment, capacity building, ensuring financial support, standards, management effectiveness evaluation and monitoring and integration of science. Last, Dr. Hong presented challenges and future direction of PAs.

Country Report Russian Federation: Dr. Valery Neronov

Dr. Neronov first introduced the current status of BRs in the Asia part of Russia which is included to the EABRN network. In this region, as Dr. Neronov stated, after Altaiskiy reserve joined World Network of Biosphere Reserves in May 2009, there are sixteen BRs. Furthermore, Dr. Neronov shared information on the survey of BR candidates including Ust-Lenskiy, Olekmisnkiy and Lena Pillars in Yakutia. In addition, Dr. Neronov pointed out the fact that all the candidates BRs need serious support from the Ministry of Natural Resources and Ecology.

Dr. Neronov then shared Russian MAB's following efforts on implementing the Seville Strategy and Madrid Action Plan in Russian biosphere reserves during 2007 to 2009. First, he reported the translation and analysis of questionnaires to identify the successes and obstacles in implementing the Seville Strategy and Madrid Action Plan in Russian. Dr. Neronov provided MAB Russia's overall information on MAB's contribution to improving the legal system for best functioning of biosphere reserves, particularly in conducting necessary experiments and ecological monitoring, educational programs within buffer and cooperation zones.

Dr. Neronov continued his report with Russian MAB's progress on information dissemination related to BR including questionnaires and set of relevant materials on the ecosystem approach to conservation of biodiversity and on impacts of alien invasive mammal species on native biota and protected ecosystems.

Dr. Neronov singled out Russia's activities and efforts on improving trans-boundary biosphere reserves. Dr. Neronov emphasized the importance of joint efforts from countries that share boundaries to improve trans-boundary biosphere reserves. He stressed further action should be taken place to understand difficulties and barriers of trans-boundary biosphere reservation as well as to identify opportunities to enlarge successful experiences. Finally, he calls for urgent action from EABRN members to improve trans-boundary biosphere reserve.

Session 6: Report, discussion and suggestions about BR activities within the EABRN from 2010-2011

Chair: Dr. CHOI Chung-Il, Chairperson, MAB National Committee of the Republic of Korea

Possible venue of 12th EABRN meeting:

- In line with the rotation principle, the next meeting of the EARBN should be held in the DPRK. The DPRK MAB Committee delegates will consult the National Authorities and inform its decision to the EABRN secretariat about the possibility of organizing the 12th EABRN meeting.

- In addition Republic of Korea offered to organize 12th EABRN meeting at Shinan Dadohae Biosphere Reserve with the possible focus on Implementation of Madrid Action Plan for Coastal and Island Biosphere Reserves with other sub themes such as Quality Economics etc.

- The Secretariat has been requested to work out the possibilities having a joint meeting with SeaBRnet. Secretariat will consult Jakarta Office who coordinate the SeaBRnet for possible such action

4th EABRN Training:

- Importance of capacity building of Biosphere Reserve managers and young scientists was recognized as one of the main priority in implementing MAP and continue the same with Chinese Academy of Sciences

- The main proposal is to organize Bio-consequences in the event of Climate Change and alien species in cooperation with International Union of Biological Sciences and Chinese Academy of Sciences

- As an alternate it was recommended to continue the application of GIS with special focus on GIS database for Sustainable Development

- In addition the secretariat has been requested to contact the previous trainees and get a evaluation report from them about the utilization of their training and prepare a consolidate report for possible submission to the next EABRN meeting

The EABRN Project Secretariat has been requested to continue the second phase of BRs Atlas for Japan, RO Korea and Russian Federation.

There has been a request from the members to secretariat to populate a list of events related to biodiversity and other main priority of EABRN and circulate to all members and experts within EABRN region in a quarterly basis

Biodiversity Conservation and Economy Development at Wuyishan Region: Background for Implementing Madrid Action Plan at Locals

Li Zhenji[1], Wu Weihuan[1], Chen Shengbin[2], Zhao Yuqiang[3], Lv Jing[1], Xiao Shuangshuang[1], Lv Qi[1]

1. School of Life Sciences, Xiamen University, Xiamen, China 361005
2. Research Center for Eco-Environmental Sciences, Chinese Academy of Sciences, Beijing, China, 100085
3. Institute of Applied Ecology, Chinese Academy of Sciences, Shenyang, China 110015

Abstract

Wuyishan Nature Reserve became the man and biosphere reserve of United Nations in 1987. Since ancient times, Wuyishan region has been influenced by Confucianism, Buddhism, Taoism, and tea culture. During the past 10 years, the global economic crisis, China's accession to the WTO, the migration of peasant to the city, preferential policies for the West Coast of the Taiwan Straits and so on had an impact on the biodiversity conservation of Wuyishan Biosphere Reserve. Under the current situation of economic development, the biodiversity conservation and development for nature reserves are faced with many contradictions such as those between protection and tourism, the long-term interests and profit-oriented, the overall interests and personal interests, orderly planning and blind construction, protection and resource utilization, and so on. To deal with these contradictions, we must take into account the overall development of Wuyishan Biosphere Reserve. We should highlight the flagship brand to drive the development of other brands, utilize photography to drive the development of other cultures, develop ecological civilization to drive the development of other faith religions. A lot of work has been carried out in Wuyishan National Nature Reserve of Fujian since its foundation. To the point of community relationship, effective efforts have been done mainly on projects such as improving the mechanism of community-based management, planning of bamboo use, the brand survey and excavation of black tea.

Keywords: Wuyishan; Biosphere reserve; Economic background; Sustainable development

"Madrid Action Plan" was based on the "Outline of Seville" of biosphere reserves and "Framework of the Constitution about World Network of Biosphere Reserves", which were approved by UNESCO in 1995. Facing new challenges of ever-changing world while considering the possible function of biosphere reserves to address these challenges, "Madrid Action Plan" determine four main areas of action for the world's network of Biosphere Reserves: 1. cooperation, management and transmission; 2. combination of function and space; 3. improvement of science research and capabilities; 4. partnership. The plan also identified 31 objectives and 65 actions for the achievement of the world's network of Biosphere Reserves. All the specific actions included the combination of responsible party and partners of local, national and international levels. So its objectives will be achieved within the set time (2008~2013).

China has 28 biosphere reserves now. Wuyishan Nature Reserve was admitted as the biosphere reserve by UNESCO in 1987. Wuyishan Biosphere Reserve has been influenced since ancient times by Confucianism, Buddhism, Taoism, and tea culture. During the past 10 years, the global economic crisis, China's accession to the WTO, the peasants' migration to the city, preferential policies for the West Coast of the Taiwan Straits and so on all have impacts on the biodiversity conservation of Wuyishan Biosphere Reserve. Therefore, in the process of construction and development of biosphere reserves, the biosphere reserves should protect biological diversity most effectively based on the harmony between human and nature.

Current background of economic development of Wuyishan region

The international financial crisis: The international financial crisis has a broad and profound influence on the world's economy. The financial crisis will impact on overseas investment, import and export, finance and securities, insurance, real estate, tourism, employment, economic growth, economic status and other aspects of China. To the import and export, since the international financial crisis has occurred mainly in developed countries and regions, and the import and export trade of China are also targeted mainly in developed countries and regions. So the crisis will have significant impacts on Chinese imports and exports, particularly on the export-oriented economy. A number of export-oriented enterprises are facing risk of difficulties in recovery of funds and reduced orders. Important changes may occur to general trade export earnings, the trade surplus, foreign exchange earnings and a series of macroeconomic indicators of China. The tea trade of Wuyishan Biosphere Reserve is involved. In recent years, the target of tea trade should be the domestic market.

Opportunities on the West Coast of the Taiwan Straits Action: In May this year, "Several opinions of State Council on supporting Fujian Province to speed up the construction of Economic Zone in the West Coast of the Taiwan Straits" were introduced, which is a strategic decision made by the CPC Central Committee and State Council while assessing the situation and focusing on the overall situation. This marks that the construction of economic zone in the west coast of the Taiwan Straits stands at a new starting point. The economic zone in the west coast of the Taiwan Straits has a more prominent strategic position in the overall development of the country. And the economic zone will play a more important role in promoting the peaceful development of cross-strait relationship. Fujian is currently making efforts to promote "the first to try" of cross-strait personnel exchanges, economic cooperation, cultural and educational exchanges, financial services, tourism and other fields. Wuyishan Biosphere Reserve and the surrounding nature reserves can take this advantage to enhance the cross-strait cooperation and exchange among nature reserves, parks and universities.

The peasants' migration to cities: Since the reformand opening up of China in 1978, with the leverage of the market economy, many rural residents have chosen to work and settle down in cities. The tides of migrant workers going into cities have appeared three times. The migrant peasants groups of the third phase show a number of new features. They tend to permanent residence in cities rather than temporary. Their residence time is continually extended and they have a tendency to move their family to cities. The tide of migrant workers was a major event in the development history of modern Chinese society. It was accompanied by industrialization and urbanization. The tide of migrant workers is a breakthrough of urban and rural division which was unbreakable for thousands of years. It has a revolutionary impact on the whole social fabric.

Because of this, many residents of the Nature Reserve are migrating to the cities. The demand for resources of the residents in the Nature Reserve become less and less, so the pressure of protection is correspondingly reduced.

Abolition of agricultural tax: Agricultural tax is a tax that the country levies on units and individuals who engage in agricultural production or have agricultural income. On January 1st, 2006, the agricultural tax was abolished, which marks the old tax that had implemented over 2600 in China quit the arena of history, marks the fate of Chinese peasants have opened up a new phase. This is not only a landmark event about a new round of changes that Chinese rural areas face, but also a great milestone in the history of Chinese civilization. Because of this, community residents own a higher degree of freedom, and they will have a higher income of tea, bamboo and other products.

Reform of collective forest right: In order to liberate and develop forestry productivity further, to develop modern forestry, to increase farmers' income, to build an ecological civilization, now the government is advancing on the reform of the system of collective forest right. The regulatory agencies of nature reserves, forest parks, scenic spots, rivers and lakes and state-owned forest (agricultural) farm, plantation and other units are request to clear ownership relations of forest and trees. These units should safeguard the stability of the area they managed and the legitimate rights and interests of oblige who own the forests.

When declaring the national or provincial nature reserves, in order to eagerly protect the biodiversity and meet the relevant standards of area, the collective forest, responsibility hill, hilly land allotted for private use, plantation using loans and agricultural land surrounding the state-owned forest have been incorporated into the protected area by local governments. There are more or less collective forests in a number of nature reserves in the south. According to the survey of relevant departments on 108 non-wetland National Nature Reserves in 22 provinces (boroughs and cities), collective forest is distributed over 69 national nature reserves. The collective forest covers an area of 1.17 million hm^2, and occupies 17.79% of the area of the corresponding nature reserves. Some nature reserves are constituted of collective forest entirely. According to an incomplete statistics, in the nature reserves of the forestry system, the area of collective land is 7.9 million hectares and the area of collective forest is about 6.42 million hm^2. Collective forest accounts for 75% of the forest of national and provincial nature reserve in Fujian.

Although China has established a relatively complete legal system of nature reserves, but most of the existing laws and regulations are formulated and promulgated in the context of the planned economy. The laws and regulations are no longer suitable to the development of nature reserves and the request of ecological building. In the existing laws and regulations, the terms are concerned more about the nature reserves management institutions and less about rights of the obliges of forest ownership. Thus, after the reform of collective forest rights was started, it is worthy of attention that how to further protect the collective forest the rights of the obliges of collective forest.

Cultural background of Wuyi Mountain regional development

Traditional culture: Chinese traditional culture includes Buddhism, Taoism, Confucianism and so on. Since ancient times, there has been rich cultural heritage in Wuyi Mountain, where traditional culture has a long history, as well as the ancient Yue culture. In history, the famous poet came here, and today, calligraphy, painting and photography art are developed. Wuyi Mountain is not only the birthplace of black tea, but also has a longer history to grow and produce rock tea and green tea. In the development process of the nature reserve, how to exploit and promote local culture is a question should be further underlined.

Buddhist culture of Wuyi Mountain began from Wei, Jin and Southern and Northern Dynasties. Tianbao Time in Tang Dynasty, the number of temple reached more than 20. In 748, Emperor Xuanzong ordered Yuan Xinzhi to Wuyi Mountain for conferring a reputation on it as famous mountains, and erected a stone which said "Ban Felling". Since then, the forests of Wuyi Mountain have been protected. The famous Buddhist Mazhu, Koubin and other monks promote Buddhism in the Wuyi Mountain.

Wuyi Mountain has a long history of Taoism culture. As early as 2000 years ago, the Qin Dynasty, the original Taoist beliefs and legends have been prevalent in the Wuyi Mountain. Since the Western Han Dynasty, there was Wuyi Master in the suburb ceremonial of the court. In the Qin Dynasty, 13 Taoists lived in the Wuyi Mountain and it was reputed to be one of the locations of the 36 Caverns by the Taoists in the Northern Song Dynasty, called "Cavern to Become God". Bai Yuchan was a famous Taoist in Southern Song Dynasty who took charge of Zhizhi Hut.

Since Song Dynasty, Wuyi Mountain became heartland of Neo-Confucianism. Yang Shi, You Zuo and other scholars gave lectures in Wuyi Mountain, where Hu Gouan, Zhu Xi and other scholars also spread Neo-Confucianism for a long term. The Neo-Confucianism of Wuyi Mountain in the academic stayed leading position in the country at that time. In the Ming Dynasty, Wang Yangming and Huang Daozhou also gave lectures in Wuyi Mountain. In the Qing Dynasty, Li Guandi who is a famous Neo-Confucian came to pay homage Zhu Xi and other sages site.

As a result of impact of traditional culture, Wuyi Mountain is not only a propitious place for giving birth to great men but a great place for tourists who come and go in a continuous stream because of its reputation as a famous scenic spot; on the other hand, the socio-economic values of Wuyi people are not exactly the same with the others. While making a fortune, Wuyi people have the awareness of forest conservation and environmental protection under the subconscious.

The tea culture: Wuyshan Biosphere Reserve is not only the cradle of the black tea, but also known as the original production place of it. Whereas circumjacent regions are the producing area of the rock tea and green tea. According to the research and study done by Zou Xinqiu and others, the black tea production renews its vigor and also becomes attractive in the world-wide. Meanwhile, the tea by-production and the form of testing tea are more and more popular, which will contribute a lot to enriching the tea culture commutation.

The Chinese tea spread from southwest to southeast in the 2nd century, and Wuyi Mountain produced tea before long. The Wuyi rock tea had been praised in the Southern Dynasties (A.D. 479~502), which was named as Wanganhou tea for it's fragrant and refreshed taste by Sun Qiao in Tang Dynasty, during 806~820, and served as a gift for dignitaries. Lu Yu, the Chinese Tea Master, who wrote the Record of Mount Wuyi, came to the Wuyi Mountain for its fame in his late years. Su Shi, the famous litterateur in the Northern Song Dynasty, wrote the Biography of Ye Jia with personification plot to give an account of the Wuyi rock tea. In Song Dynasty, Fan Zhongyan, Ouyang Xiu, Su Shi, Zhu Xi and others cried up the Wuyi tea, which also made Wuyi tea more and more popular in the world. The Wuyi tea became the tribute to the court officially since the Royal Tea Garden was founded in the Yuan Dynasty. Zhu Yuanzhang, the Emperor of Ming Dynasty, promulgated to the public that the Wuyi tea was the first grade among the tributes.

The Wuyi black tea was exported in a large number after five trading ports were set up, which contributed to the rapid development of Wuyi tea. The aristocratic class in the United Kingdom, the Netherlands and other European countries had thought the rally banquet of Wuyi tea drinking as a noble manner, and became popular before 17 century. In the mid-18 century, some scholars named the Wuyi tea as Bohea, and since then, the Wuyi tea was known around the world. The Wuyi tea has a rich variety of 264 well-known kinds, of which the cinnamon tea was selected as the famous national tea, won gold and other honors continually since 1982. And the Da Hong Pao which is the King tea was more worldly. Wuyi Mountain Lapsang Souchong black tea, with longan fragrant, was sold to the United Kingdom and the United States as early as the 17th century. Up to today, the residents of Wuyi Mountain have their own tea gardens, every household can produce tea on their own, also there are many tea shops in the streets, and everyone can speak of tea. What's more, the tea becomes part of the residents' life.

The travel culture: With the social development, tourism has become one of the most powerful and biggest industries among the global economies. The industry position and the economic role in the economic development of the tourism in urban intensifies gradually. Meanwhile, the tourism gradually boosts the urban economy, drives force to the social employment, as well as promotes the culture and environment. The tourism is a pillar of China's economic development industries. Nowadays, more and more countries announce China as their tourism destination. Even in the world financial crisis, there are still some opportunities for tourism development.

The national economic and social development during the tenth five-year plan and the 2010 program in Wuyishan City identify the tourism as key to planning. And the plan calls us to gripe the opportunity to be listed in “the world natural and cultural heritage”; to give full play to the abundant tourist resources and the advantageously outstanding characteristics; to set up the great conception of the tourism, the industry, and the market; to configure the tourism resources rationally and to make well use of the scenic spots and tourist resorts; to improve the overall quality of the tourism and economic benefits; and finally, to put the Wuyishan area into the international vocation city and the ecological and cultural city. Therefore, Wuyishan Biosphere Reserve should be based on this, start with the perspective of ecological tourism, and attract more tourists and enhance their ecological consciousness.

The green culture: The green culture is environmental awareness and environmental philosophy, and its ecological civilization and civilization development. The green culture is a kind of harmonious relationship about development between human and nature, which can make the sustainable development of human culture come true, and it is basic characteristics are to protect the nature and environment, and to promote the sustainable utilization of the resources. Its contents fall into two aspects: one is the awareness and philosophy of the environment, the other is viewpoint of the ecological civilization and the civilization development. The former reflects in the people’s production and every aspect of life, while the latter embodies in a nation’s or a region’s development strategies. With the promotion urged by the international green and peace organization, the domestic green camp, the friend of the nature, global village, the wild association, the friend of the earth and so on, more and more people are aware of the green culture.

Carved inscriptions on cliffs and the culture of painting and calligraphy: In Wuyi Mountain, there are many stone inscriptions inscribed in the cliffs varying from the Jin or Tang Dynasties to contemporary. Profound verses are showed in the marvelous stone inscriptions in different forms and writing art. The forefathers left many cliff carvings and calligraphies, such as Guo Pu in Jin Dynasty, Zhu Xi in Song Dynasty, Chen Xing and Qi Jiguang in Ming Dynasty, contemporary Pan Zhulan, etc.. Huang Daozhou and others inherited some paintings to us. And all of these cultural traits stimulate modern Wuyi people’s calligraphy and painting hobby.

Culture of poetry: Since the long history of Wuyishan was influenced by Buddhism, Taoism, Confucian and the beautiful natural scenery, a lot of literators wrote many poems to admire the Wuyi Mountain, such as Zhu Xi's “poem of the Jiuqu Stream”. There are also poems that describe Wuyi people. Liu Yong, a famous Wuyishan poet in the Song Dynasty, created a graceful style of lyrics. Unfortunately, the local residents write little poems in modern times.

The contradiction between protection and development

The contradiction between protection and tourism: Since ancient times, a number of nature reserves have been protected by the government, and the Taoists, Buddhists and our ancestors. Tourism resources are rich throughout the country. Today, the nature reserves attract tourists from all over the world, but many tourists belong to the mass tourists. The current main task is to guide the visitors to know ecological laws and biodiversity, and to understand the culture of nature reserves on the base of protection.

The contradiction between the long-term interests and profit-oriented: Under the guidance of economic development, the world and many people are more or less eager for instant success and benefit, with little regard for long-term interests. We should be aware that we should leave biodiversity to our offspring while developing economy rather than push the limits. Many nature reserves are keeping rich biodiversity. The conversion of a small amount of resources can create enough economic benefits. The tea production and

limited tourism in Wuyishan Biosphere Reserve can create long-term profits basing on the good ecological environment and rich biodiversity. There are no differences to other nature reserves.

The contradiction between overall interests and personal interests: In the economic development period, some people benefits farthest through various means. This results in increasing differentiation of social interests and social injustice. The obvious social conflict of interest affect the sound operation and development of society. Therefore, it's necessary to strengthen the moral construction, to restrict and regulate the profit motive and behaviour of people, to guide people to reasonable choices of interest objectives, and to make people adjust the interests of demand consciously. It's important to make scientific selection of behaviour of interests and handle the relations of interests correctly.

The contradiction between orderly planning and blind construction: There are more or less residents in nature reserves over the country. With the growth of population and upturn of economy, nature reserves are faced with the issues of the construction of nature reserves or the building of residents. Some of the constructions lack coordination compared with landscape of nature reserves. Therefore, nature reserves should lay a plan on the conceptual planning for the construction during the period of overall planning. The construction of biosphere should be planning ahead to ensure the conservation of biodiversity.

The contradiction between conservation and resource utilization: Many local residents live on bamboo, tea, or other resources for generations. The utilization of bamboo, tea and other resources is in conflict with the biodiversity conservation in nature reserves. After investigation on biodiversity in nature reserves, the use of resources should be restricted within a certain range, according to the distribution of protection objects.

Principles for solving the conflicts of community development

Consider the development of nature reserves as a whole: Nature reserves, and local communities and surrounding communities should be considered as a whole. Economic and cultural development of communities must be included in the management of nature reserves. Many nature reserves have experienced the conflict with the local communities. Local residents have contributed the forest on which they used to live on for generations. Thus they should be compensated accordingly. And the state and nature reserves should be concerned about them as a vulnerable group. The government and society should be concerned about nature reserves too. We should take into account the overall development of nature reserves for the benefit of mankind.

Develop the flagship brand to drive the development of other brands: There are native brands in many nature reserves and the surrounding area currently. These brands should be tapped and upgraded to competitive products through research. The flagship brand will be long-lasting if the quality and price are stability. At the same time, the flagship will promote the development of other brands. Due to the high biodiversity in the nature reserves, the quality of livestock, chickens and ducks, vegetables, dried fruits, tea and herbs that came from natural reserves is better than the products from other regions. These products can be developed to create brands. The products should be provided to eco-tourists only and be assured of the quality. This is a stable income for the local community.

Develop photography to drive the development of other cultures: A wide range of cultural activities could be carried out in the community of nature reserves. It is easy to learn photography for the residents. This will drive the development of calligraphy, poetry, writing, painting and sports. So the staff of nature reserves and the community residents can live in a mild-mannered atmosphere. Nature reserves are rich in animal and plant resources. With the popularity of digital cameras, many community residents and staff of nature reserves can have a digital camera to take photograph on a variety of birds, amphibians, insects, flowers and landscape.

The administrative bureau and community can organize aperiodic photographic competitions, encouraging the development of community cultural and the further development of other cultural activities.

Develop green culture or tea culture to drive the development of other faiths: Belief is the foundation of culture. Nature reserves have good ecological environments and stable ecological systems. Green culture or tea culture is a better way that can lead to build harmonious communities. Staff of the nature reserves and community residents can upgrade their personal cultivation through imbursing the exchange activities of Confucian, Zen, Taoism and Catholicism. With the current development of domestic and international environmental NGO, the intervention of Green Camp, Wild Association and bird-watching camps can stimulate staff of nature reserves and community residents to understand ecological laws, to understand and learn the law of birds' activities, the relationship between insects and plants, the distribution law of plants, the law of bamboo shoots growth and ecological behavior of monkey. And they can live in harmony with nature in the nature reserves. The nature reserves can also invite masters of Chinese traditional culture, Buddhists, Taoists and Pastors to give lecture about the relationship between man and nature to enhance personal cultivation from time to time.

The experience in solving the contradictions and countermeasures of community development in Wuyishan Biosphere Reserve

The mechanism of community management: Since the establishment of Wuyishan Biosphere Reserve, strict conservation and management measures has been adopted, biodiversity has been protected effectively, eco-tourism has been taken assistantly, special culture and resources have been excavated, and community economic development has been taken into account. It become an ideal model of protected areas under the effective protection. The existing community management institutions include internal management institutions and external coordination organization. The internal management of institutions are community-managed branches whose main function is community management; external coordination organization is the Joint Protection Commission of Wuyishan. Through the internal and external organizations, they effectively communicate with community residents and learn about the difficulties and needs of them.

Plan and utilization of bamboo resource: Wuyishan Biosphere Reserve is rich in bamboo resources. As early as 1985, in order to take the advantage of local bamboo resources, to help regional villagers to grow vegetable and do livelihood, lots of things was done by the Reserve. They carried out research on structure and biomass of high-yield natural bamboo forest, established model base in which there are high-yield bamboo more than a thousand acres in Dazhulan, introduced technologies that are of superior varieties and advanced for bamboo cultivation, and so on. As a result, the number of bamboo increased significantly, and also the average diameter of bamboo increased by 30%. Finally, the achieved results were promoted and popularized comprehensively in the communities.

Bamboo and its deep processing become the backbone of the community economy, and it played a significant role in solving the livelihood of the villagers. In 1990, the two of the three administrative villages in the area, became the best villages in Fujian Province, and the other was well-off in Wuyishan City.

Investigation and excavation of black tea brand: Each nature reserve has specific diversity characteristics, Wuyishan Biosphere Reserve with its Lapsang Souchong black tea and the bamboo resources of unique characteristics. To gradually reduce dependence on bamboo resource utilization, in recent years,Wuyishan Biosphere Reserve stepped up its tea production. The Tongmu Village in the nature reserve is the birthplace of the black tea in the world, which has been a glorious history. The black tea once swept the British Isles, and became the British royal Queen drinks. In Jan 2002, with the establishment of the Research Program of Lapsang Souchong Tea, through organizing scientific and technological personnel and doing in - depth textual

study, which confirmed that the Wuyishan Nature Reserve is the world's black tea ancestor - the birthplace of Lapsang Souchong tea and the main producing areas. After the result was published, the status and worth of Lapsang Souchong black tea were enhanced quickly, local tea production was fully restored, which changed a single economic structure - bamboo-based industry, the income of local villagers has also been significantly improved. A research program of the black tea benefits the whole community. Now, the regional village of Tongmu, Autou and Dapo have become the wealthy side of the well-off village. And Lapsang Souchong black tea was brought to light, as a much-told story of resource development and utilization in protected areas.

Active in biodiversity education: Since the 17th century, Wuyi Mountain area has become a world known areas for its high biodiversity. Since the 1990s, a museum has been built. It has accepted a large number of pupils and students in internships and summer camp, and has played a nurturing role. Also, the protected areas can also play the role of education and publicity. After its built, lots of visitors have ever been here, amounts to 70000 person-times, including visitors of research, internships, experts from domestic and foreign, scholars, college students and youth from summer camps. It creates the basic conditions for domestic and international technical cooperation, academic exchanges, education and training, popularization of science.

Conclusion

Wuyishan Nature Reserve, one of Man and the Biosphere Reserve in China, is extremely rich in biodiversity. The area has long been affected by Confucianism, Buddhism, Taoism, as well as the tea culture. Since it was established 30 years ago, plenty of work has been done effectively, such as biodiversity conservation, community co-management, scientific research and popularization, development plan of the bamboo resource and black tea brands, and so on. As always, we would continue to protect the biological diversity, concern with the development of the nature reserve and surrounding communities, and finally create a global model in which man and nature are in harmony.

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Implementation of Madrid Action Plan and EABRN

Chung-Il CHOI and Hag Young HEO1
MAB National Committee of the Republic of Korea
1Korea National Park Services

This paper examines the implementation status of the Madrid Action Plan (MAP) in the Republic of Korea(ROK) and deals with future direction based on current situation. This presentation is expected that the ROK's experience can be shared among the member states of the East Asia Biosphere Reserve Network(EABRN) and Chinese Biosphere Reserve Network(CBRN).

To get better understanding of MAP and its implementation and related matters gathered by MAB secretariat for the delegates from EABRN and some of the relevant informations of MAP are presented. These include Madrid declaration from the Third World Congress of Biosphere Reserve on MAB Programme and World Network of Biosphere Reserve (WNBR), and Agenda 6 of the 21st MAB International Coordinating Council(ICC) Meeting in Jeju, 2009 together with main conclusion and recommendations are introduced and reviewed.

Analysis of the implementation of MAP in ROK by main action areas, targets and actions has been presented. A few actions proved not to be sufficiently applied, yet general conclusions are the implementation of the MAP can be cost effective way of preserving biosphere reserve(BR) in terms of conservation, development and logistic support, the objectives of MAB Programme.

Madrid Declaration on UNESCO/MAB Programme and WNBR, Madrid, 8 Feb. 2008

- Representatives: UNESCO Member states, BRs, Public & Private Sector Institutions, Civil Society Organization.
- 3rd World Congress of BRs & 20th Session of ICC
- Concerned by: Biodiversity(BD) loss, Climate Change(CC), Need Nature Conservation, Environment Protection
- Recalling: MAB as long term Intergovernmental, Interdisciplinary programme
- Recognizing: 531BRs/105states(since 1976)
- Appreciating: Participatory and good management approaches that allow multiple
- stakeholders and partners to an integrated part of BR
- Acknowledge:
  - o WNBR/Sustainable Development(SD) Principle/Beneficial between nature, BD conservation, socio-economic well being
  - o Minsk,1983/Seville,1995
  - o Gratitude to Spainish Ministry of Environment(MOE) for 20th ICC & 3rd WCBR
  - o Convinced UN Decade for Education for Sustainable Development (UNDESD) (2005-2014)
- Urge:
  - o Optimum use of BR for promotion of SD
  - o WNBR, regional, subregional, national networks as fora for exchange of experience & lessons learned from UNDESD
- Encourage: MAB for states with no BR
- Call upon:
  - o Pursuit of coherent approach & strengthen cooperation within UN system (eg, UNDP, UNEP)
  - o Millennium Development Goals(MDG), Convention on Biological Diversity(CBD), CC, Combat Desertification etc.

- Capitalized on: New challenges; Loss of traditional knowledge, cultural diversity, demography, arable land, CC, BD, SD.
- Build: Effective partnership; Government, Private sector, Mass Media, Civil Society Organization, Indigenous/local community, Research, Monitoring, Education centers, other such institutions for implementation of MAP
- Encourage: Other intergovernmental Scientific Programme, World Heritage Committee(WHC)
- Promote: MAB & WNBR as global, regional, national fora to dynamic & mutually beneficial relationship between people and BR

21st MAB ICC(Jeju, 25-29 May 2009)

Implementation of MAP was discussed as Agenda 6 of this meeting. The contents of agenda 6 were as followed.

Agenda 6. Implementation of MAP
6.1. Introduction by secretary of MAB (SC-09/CONF.207/4)
6.2. Assessment of Seville Strategy (SC-09/CONF.207/5)
6.3. BR concept in framework of national legislations (SC-09/CONF.207/6 & CONF.207/INF.4)
6.4. Communication strategy & CHM (SC-09/CONF.207/7)
6.5. Report on actions undertaken by UNESCO member state (SC-09/CONF.207/8)
6.6. Reports on actions undertaken by regional and ecosystem networks (SC-09/CONF.207/9)
6.7. Future of the Informal Supporting Group(ISG) established by the bureau of ICC in Apr.2008 (SC-09/CONF.207/10)

And the main conclusions and recommendations of 21st ICC were as followed.

- It was suggested the work on Quality economies in BR
- Attention to the need for management committees at the individual BR level.
- To integrate the BR concept into the national legislative instruments and processes.
- To prepare a list of pre-Seville sites and an assessment of the number of sites that are unlikely to be re-designed to meet the Seville and MAP expectations.
- The nomination of BR and the periodic review required simplification and revision.
  - o from 10 to every 4-6 years
  - o Council members proposed that a time-limit for periodic reviews- a five-year interval
- One year margin must be prescribed in the Statutes

The promotion of BR as learning platforms and places for sustainable development.
- The first evaluation of MAP in 2010
  - o Secretariat to submit a progress report to the 22nd session of the Council
- Requested the Secretariat to make a comparison between 2004 and 2009(number, areas, budgets)
- The age limit of MAB Young Scientists Award shall be fixed at 40years of age for all applicants
- To create a Global Network of Island and Coastal BR Contributing to Action on Climate Change and Sustainable Development by ROK and Spain.
- 2011: 40th of the MAB, 23rd session of the MAB-ICC

Implementation of Madrid Action Plan

This chapter consists of three parts, which are MAP outline, implementation status and possible suggestions driven from Korea's experiences of BRs. The implementation status of MAP theme as follows.

MAP outline: Time frame: 2008-2013 - 4 Main action areas

Main action area	Target	Actions
Cooperation, Management and Communication	11	23
Zonation – Linking Functions to Space	3	7
Science and Capacity Enhancement	10	21
Partnerships	7	16
Total	31	67

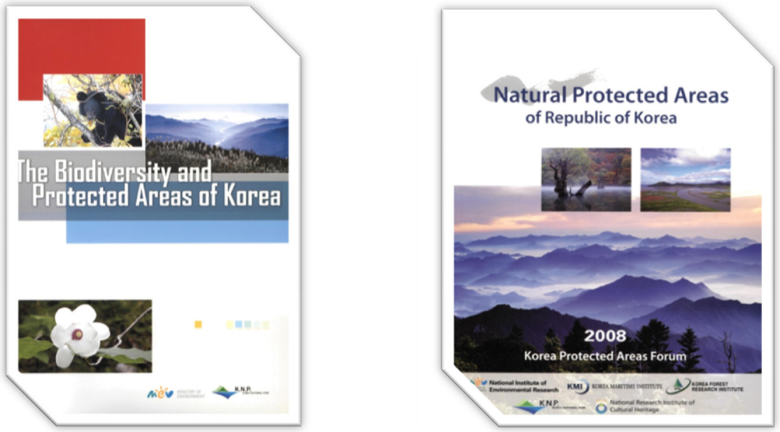
- Responsibility for action
  - o International level: MAB secretariat, 23 actions; MAB regional Networks, 30 actions; MAB thematic networks, 6 actions
  - o National level: MAB National Committees, 35 actions; National Commissions for UNESCO, 13 actions
  - o Local level: Individual BRs, 34 actions

Theme 1. Cooperation, Management and Communication

Effective implementation of the Seville Strategy
- Assess the achievement and compile the information
- MAB secretariat has main responsibility for actions.

Cooperation with international programmes
- Jeju-BR : linked to WH site(designated as WH site in 2007)
- Sorak-BR : Adopted IUCN category system (IUCN category Ⅱ)

Integrated information & communication strategy
- Publications on Protected areas and Biodiversity(Not only focus on BR sites, but include BR sites.)



Pictures showing the publications

Participatory regional networks

- Support for EABRN(East Asian Biosphere Reserve Network) : ROK Ministry of Environment has provided funds for the EABRN activities
- Support for the Jeju initiative: Jeju special self governing province's provision of fund

Enhanced cooperation between experts and practitioners in relevant key issues

- MAB programme thematic networks: Global Network of Island and Coastal Biosphere Reserves Contributing to Action on Climate Change and Sustainable Development (ROK & Spain)

Communication strategies for each BR, integrated with national and higher levels

- Mt. Sorak BR, Jeju Island BR: communication strategies include the publication of promotion(PR) books, PR videos, leaflets and brochure.

Functioning of MAB National Committee

- MAB National Committee of the Republic of Korea consists of 19 members (4 Governmental bodies, 2 Management authorities, 13 Experts)
- Use forum for communication & cooperation among government officials, as well as between government officials and experts

Increased linkages between BR activities and SD initiatives

- Increase cooperation with UNEP and IUCN through signing an MOU or sending staffs and Organizing joint projects.

Periodic review, zonation

- Set up the Management plan with advisory process and public hearing.
- KNPS operates "Park Management Council" to promote stakeholder's participation and cooperation
- Seorak BR: Park Management Council is composed of representatives of various stakeholder groups(14 members).

Open and participatory procedures and processes in the designation, planning and implementation

Pictures showing the consultation processes with local community

Enhanced legal recognition of BR

- Discuss with related governmental officials how to include BRs in national legislative instrument and processes

Theme 2. Zonation-Linking Functions to Space

Analysis of zonation of all biosphere reserves
- Responsibility for action: MAB secretariat and Regional Networks
- EABRN needs to consider to carry out a survey on the present zoning system and how well they fulfill the three functions in each zone.(Time-bound: 2010)

Functional zonation(suitable pattern)
- Mt. Seorak BR need to be redesigned zoning pattern as good sample site which has functional BR zonation
- KNPS and MOE are carrying out rezoning the district of national parks in Korea through task force team.

Co-operative conservation and development strategies for BR
- Better connectivity, better inter-linkage, better consistency in planning
- Make a management conservation plan for BR(or National Park)

Theme 3. Science and capacity enhancement

Communication of BR experiences
- To publish the annual report
- Need to self assessment process for each BR

Site-based policy-relevant research programmes
- 19 programmes(on ecosystem service & participation), 20 programmes(on management plan & zoning)
- Various research & monitoring programmes
- KNPS monitoring programme: 15 fields (Special protected area, Flagship species, Road-kill, Damaged area, etc)
- Using the place for academic researches and surveys are as follows:

Research Title	Organization
Park Resource Monitoring at Soraksan NP	Hanyang Univ.
Plant Gathering	Seonggungwan Univ.
National Forest Research	Korea Forest Service
Survey and Research	Suncheon Univ.
Ecosystem research in Jungbongsan	Catholic Univ.
Survey and Research	Gongju Univ.
Survey and Research	Korea oriental medicine institute
Study for Taxus cuspidata var. nana(yew tree)	National arboretum
Gene sampling	National Institute Biological Resource
Endangered species survey	National Institute Biological Resource
Baekdudaegan trail survey	Korea Forest service
Survey and Research	Korea Forest Research institute
Study for Native plant	National Institute Biological Resource
Survey and Research	Korea Ocean Research &development institute
Ecosystem Survey and research	Seoul National Univ.
Plant Gathering	Seoul National Univ.
Study for Facility and Landscape	Honam Univ.
Survey for valley	Sokcho City

Training BR managers and stakeholders

- Expert workshop for establishment of management plan of Sinan Dadohae (23~24 Oct 2009)
- EABRN: GIS Education programme (April. 2009): ROK 2, DPRK 2, China 8, Mongolia 2, Russia 1, Kyrgyzstan 1

Use of BRs by UNESCO member states for their work with other Intergovernmental Scientific Programmes(ISPs), including Intergovernmental Oceanographic Commission(IOC) and Management of Social Transformations Programme(MOST)

- Through the ISP national committees meeting, develop joint projects among MAB, IOC and International Hydrological Programme(IHP). Especially, Jeju Island BR, which has a marine ecosystem, makes efforts to joint project with IOC.

Decade of Education for Sustainable Development

- Promote the BR as a learning site
- Learning sites for research, adaptation, mitigation in relation to climate change - Mt. Seorak BR: Citizen Academy in NP(Education programme for local community)

Pictures showing the citizen academy in Mt. Seorak BR

Exchange of educational resources

- Translated the Seville strategy and uploaded on internet Homepage
- “Biosphere reserves: special places for people and nature(2002)”: Korean National Commission for UNESCO published translation book in 2004 supported by Ministry of Environment

A mechanism for biosphere reserves to address urban issues in a regional context

- Jeju island BR might be needed more attention on urban issues

Theme 4. Partnerships

Improved financial mechanisms for BR

- Need more attention in ROK

Improved generation of profits and livelihood benefits in BR

- Mt. Seorak BR: Research on the effect of Seorak National Park to the regional economy

Increased involvement, support and buy-in of private sector

- Certification Programme(Agricultural and marine products, Accommodation)
- Provide direct transaction marketplace: Mt. Seorak BR(Chrysanthemum Tea), Sinan Dadohae BR(Sun-dried salt)

Pictures showing the certification programme and transaction marketplace

Exchanges between biosphere reserves

- Exchange programme between ROK and Mongolia(28. Aug. ~ 1. Sep. 2007)
- Memorandum of Agreement(MOA) between Russian MAB National Committee (2008)

Picture showing the signing ceremony of MOA between Russia and ROK MAB in Madrid, Spain

Promote partnerships

- Need to establish cooperation plans

Transboundary biosphere reserves

- Seminar, symposium and forum concerning designation of DMZ Korea as BR under MAB Korea.

Picture showing the DMZ debate forum

Promote BR for peace, security and conflict management
- To encourage the ecological connectivity
- 3 Ecological axes in ROK: Marine Protected Area(west sea), Baekdudaegan and DMZ

Coda

Implementation of the MAP by ROK is presented. It is expected that this experience can be shared by EABRN member states and CBRN member BRs. However among 31 targets quite a few revealed difficulties in their implementations such as in zonation, learning sites, financial mechanism and partnership promotions. Followings are suggested for more effective way of implementing the MAP to EABRN. These are:
- Provision of regional action plans appropriate for more effective implementation of the MAP
- Pursuit and carry out research projects suggested by MAP, ie.,
- Cooperation for environmental disaster; eg., Sandy dust phenomenon, desertification, Tsunami etc.
- Migratory birds, Marine Pollution
- Climatic change related research
- Fund raising/sharing for EABRN

These are lessons learned by ROK and it is encouraged that EABRN member states pursue these lessons. Appropriate regional action plan can be differentiated depending upon individual circumstances of each BR, yet state wide practical and feasible action plan should be devised and implemented.

Brief Report on the 21-st session of International Coordinating Council of the Man and the Biosphere (MAB) Programme

(Jeju KAL Hotel, Grand Ballroom, Jeju, Republic of Korea, 25 - 29 May 2009)

Dr. Valery M. Neronov
Vice Chair of the MAB ICC&
Vice Chairperson of the Russian MAB National Committee

Among participants of 21-st session of ICC MAB held at the Jeju KAL Hotel, Jeju, Republic of Korea from 25 to 29 May 2009 there are the following Members of the ICC as elected by the UNESCO General Conference at its 33rd and 34th sessions: Austria, Chile, Colombia, Congo, Egypt, Gabon, Germany, Indonesia, Iran (Islamic Republic of), Israel, Latvia, Madagascar, Mali, Philippines, Republic of Korea, Russian Federation, South Africa, Spain, Sri Lanka, Sweden, Togo, Ukraine, United Kingdom of Great Britain and Northern Ireland, Venezuela, Viet Nam and Zimbabwe. In addition, observers from the following Member States were present: Bulgaria, Czech Republic, Democratic Republic of the Congo, India, Japan, Malaysia, Mexico, Portugal and Turkey. It means that representatives of only half of members of EABRN (shown in bold print) had a chance to attend this remarkable and well organized session first time held directly at the territory of EABRN region and in a biosphere reserve.

Mr Henri Djombo, Minister of Forestry Economy of Congo and Chair of the ICC could not be present at this 21st session due to other commitments and Mr Chung-Il Choi of the Republic of Korea, Vice-Chair of the MAB-ICC for Asia Pacific has been unanimously endorsed as Chair of the session. Accordingly first of all we have to express our gratitude to the National MAB Committee of Republic of Korea and personally to Mr Chung-Il Choi for tireless efforts for achieving good results and secondly to review the main features and results of this session for acquaintance with them participants of EABRN-11 meeting.

At the opening of the session Dr. N. Ishwaran, Secretary of MAB Programme read the message from Mr Koïchiro Matsuura, Director-General of UNESCO. Mr Matsuura thanked the Korean Government, specifically the local host, the authorities of the Special Self-Governing Province of Jeju, for their generous offer to host the 21st session of the MAB-ICC. Mr Matsuura noted that the main item of discussion at this session of the ICC would be the inclusion of new sites into the World Network of Biosphere Reserves (WNBR). Two other topics of particular interest to the discussions of the Council are the "International Year of Biodiversity" in 2010 and expanding the ERAIFT model both in West Africa and through the promotion of South-South cooperation on humid tropics in the Congo Basin, Southeast Asia and the Amazon. After opening remarks by a representative of the Minister of Environment of the Republic of Korea and by the Governor of Jeju Special Self-Governing Province there was presented a report of Mr Germain Kombo of Congo on behalf of the Chair of ICC, Mr Henri Djombo. The Council noted with interest in this report the infornmation on organization of the World Forum on Sustainable Development (Brazzaville, Congo from 27 to 30 October 2008) and on the proposed UNESCO/MAB regional project on "Biosphere reserves as Centres of excellence and Learning Laboratories for Sustainable Development in the Congo Basin".

After adoption of the agenda and timetable the Secretary of the MAB Programme presented his report on activities implemented since the 20th session of the MAB-ICC held in Madrid in February 2008. This report provided an introduction to the agenda items to be discussed at this session and highlighted activities undertaken by the Secretariat and selected Member States to implement the Madrid Action Plan (MAP). The Secretary pointed out MAB efforts to collaborate with other intergovernmental scientific programmes such as the International Oceanographic Commission (IOC) and underlined the significance of seeking the endorsement of the UNESCO Executive Board and General Conference in using the WNBR as a UNESCO-

wide platform for intersectoral collaboration during the last five years (2009-2014) of the UNDESD. Finally, with regards to future ICC sessions, the Secretariat proposed that the ICC meet every year so as to fully participate in annual decisions on new biosphere reserves and consider the 40th anniversary of the MAB Programme as a special occasion for hosting the 2011 session.

The Secretariat introduced document SC-09/CONF.207/4 describing several items in the agenda and related working and information documents to be considered by the Council, and related to various aspects of the implementation of MAP. Special attention of the session's participants was called to the information derived from a questionnaire survey on the assessment of the achievements of the Seville Strategy as required by MAP target 1 and action 1.1. Another important topic was connected with a survey to collect information on the extent to which the biosphere reserve concept is included in national legislation frameworks, The Council requested the Secretariat to prepare a document for the next session of the ICC, which would group countries that have tried to integrate the biosphere reserve concept into various categories of legislations, for example nature conservation, environmental protection, sustainable development and provide brief descriptions of the outcome and lessons learned through such national efforts.

Communication is critical for the WNBR and can be significantly improved. The Council welcomed and adopted the integrated strategy for communications and the clearinghouse mechanism, which aims at increasing the visibility of the WNBR, improving the access to information for biosphere reserves and facilitating interaction between biosphere reserves. The Council encouraged the Secretariat to work in partnership with Member State institutions and regional and thematic networks as appropriate in the implementation of the integrated strategy. The Secretariat introduced document SC-09/CONF.207/10 that proposes the replacement of the Informal Support Group (ISG) established by the Bureau at its meeting in April 2008 by a formal ad-hoc Committee, referred to as the International Support Group (ISG) under the aegis of the Chair of the MAB-ICC. The Council endorsed the idea and the proposed TOR for the ISG.

The following ICC Member States made presentations on actions undertaken in their countries: Egypt, Spain, Russian Federation, United Kingdom of Great Britain and Northern Ireland, Republic of Korea, Gabon, Israel, Germany, Chile, Colombia, Congo, Madagascar, Austria, Latvia, Mali, Islamic Republic of Iran, Sri Lanka, Sweden and Indonesia. The following ICC Observer Member States made presentations: Mexico, Portugal, Turkey and Bulgaria. The following Regional and Sub-Regional Networks made presentations: IberoMAB presented by Mexico, ArabMAB by Egypt, EABRN by the Republic of Korea, EuroMAB by UK, Central Asia by the Russian Federation and AfriMAB by Mali. All presentations that were submitted to the Secretariat in written form will be made available on the MABNet.

A lot of attention and time was given to proposals for 32 new biosphere reserves and extensions or modifications to designated biosphere reserves that are part of the WNBR. The Bureau of ICC MAB considered at its meeting on 24 May 2009 additional information received by the Secretariat on any one of the 32 sites and made recommendations concerning their inclusion or not in the WNBR for final approval by the Council. Based on the recommendations of the IACBR and the MAB Bureau, the MAB Council approved 22 sites for inclusion in the World Network of Biosphere Reserves. Among them three at the territory of EABRN: Mount Myohyang, Democratic People's Republic of Korea; Shinan Dadohae, Republic of Korea; Altaisky, Russian Federation. With the addition of the 22 new biosphere reserves, the WNBR now consists of 553 biosphere reserves in 107 countries (with Malaysia and Syria having their first ever biosphere reserves included in the World Network in 2009). All details on approved and deferred sites and the recommendation concerning a revision the biosphere nomination and the periodic review forms could be found in the final report of the session available at web-site of UNESCO/MAB.

Special attention was given to MAB and WNBR contributions to the implementation of the UNESCO

Strategy for Action on Climate Change and the "Proposal for the creation of a global network of island and coastal biosphere reserves contributing to action on climate change and sustainable development" prepared by the Republic of Korea and Spain was approved. In order to facilitate the work of the network, it is proposed that both the Jeju Initiative and Menorca Biosphere Reserve share leading roles. It is suggested that each project would choose a particular thematic focus when establishing and developing partnerships with island and coastal biosphere reserves. Concrete plans for activities would be elaborated by each project in close collaboration with relevant biosphere reserves, and overall co-ordination would be provided by the MAB secretariat at UNESCO Headquarters (Paris) for the effective functioning of the global network. Delegates felt that the focus on mountain ecosystems in the MAP (target 24) preferably could be complemented by efforts by MAB to focus on other ecosystems, such as forests, drylands, river systems, peatlands, as well as on critical biogeographical regions, such as the Great Rift Valley in Africa.

In conclusion of this brief report on the 21st session of ICC MAB I would like to remind to the participants of the EABRN-11 meeting that Dr. N. Ishwaran, Secretary of MAB Programme in its circular letter dated October 8, 2009 called attention of all Delegates and Observers to the Main Conclusions and Recommendations of the Twenty-First Session of the ICC MAB. I am sure that most of participants of the EABRN meeting have seen this document and it gives me a possibility to highlight (shown in bold print) only actions which are the most important for our region:

In view of the importance of economic issues of biosphere reserves, it was suggested that the work on quality economies in biosphere reserves be reinforced and the development of statutory frameworks for regional networks of biosphere reserves be given due consideration in efforts to review and update that of the WNBR. The Council called for action from the Secretariat to improve the visibility of MAB and WNBR to levels enjoyed by the World Heritage inscription; while the Council recognized the important role MAB National Committees play, they also called attention to the need for management committees at the individual biosphere reserve level. Furthermore the Council agreed that closer links between the work of WNBR and ESD could help in positioning WNBR as a significant tool to achieve UNESCO targets for the remaining years (2010-2014) of the DESD. (para 12 in the Final report of ICC session).

The Council decided to set a new deadline of 30 September 2009 for receipt of responses on the questionnaire on the assessment of the achievements of the Seville Strategy as required by MAP target 1 and action 1.1, strongly urging all ICC and Observer Member States to facilitate the Secretariat's efforts to improve the response rate. National Commissions for UNESCO and regional/thematic networks should be called upon to support the Secretariat efforts to optimize the response rate to the questionnaire. (para 15)

After reviewing document SC-09/CONF.207/6 that outlines the first phase of a study involving a survey sent to all MAB Committees (SC-09/CONF.207/INF.4) to collect information on the extent to which the biosphere reserve concept is included in national legislation frameworks, the Council requested the Secretariat to make information available from different countries that have incorporated the concept of biosphere reserves into the national legislative instruments and processes. The Council requested the Secretariat to prepare a document for the next session of the ICC, which would group countries that have tried to integrate the biosphere reserve concept into various categories of legislations, for example nature conservation, environmental protection, sustainable development and provide brief descriptions of the outcome and lessons learned through such national efforts. (para 16)

The Council welcomed and adopted the integrated strategy for communications and the clearinghouse mechanism described in document SC-09/CONF.207/7 which aims at increasing the visibility of the WNBR, improving the access to information for biosphere reserves and facilitating interaction between biosphere reserves. (para 17)

The Council requested the Secretariat to inform Member States of the dates and the documents sufficiently in advance of the dates of the meetings of the International Support Group (ISG) to enable Member States to consult with national experts as appropriate in the preparation for the information exchange sessions effectively. (para 18)

The Council called upon the Secretariat to prepare a list of pre-Seville (1995) sites and an assessment of the number of sites in that set which are unlikely to be re-designed to meet the Seville and MAP expectations as defined in MAP target 9 for submission to the consideration of the 22nd session of the Council. (para 62)

The Council adopted the recommendation of the Bureau that both the biosphere nomination and the periodic review forms required simplification and revision. The Council suggested that the revisions of both forms be undertaken, with the assistance of an electronic working group. The time interval for periodic review should also be reduced from 10 to every 4-6 years. The Secretariat must explore the feasibility of providing technical support for capacity building in conducting the periodic review process in co-operation with regional networks and other appropriate partners. (para 63)

The Council agreed that it accepted the submission of a draft resolution on the promotion of biosphere reserves as learning platforms and places for sustainable development in principle and invited willing ICC Member Permanent Delegations such as Madagascar and Viet Nam to explore with the Secretariat the feasibility of preparing and submitting such a draft resolution to the 35th session of the UNESCO General Conference in consultation with all other ICC and interested Observer Member States. (para 66)

There was broad consensus on renaming the International Coordinating Council of the Man and the Biosphere (MAB) Programme as "MAB Council" removing the word 'Coordinating'. Some ICC Members felt that referring to the Council explicitly as an "Intergovernmental Council" could facilitate the participation of Government Ministries and Departments. (para 69)

Council members proposed that a time-limit for periodic reviews – a five-year interval with one year margin must be prescribed in the Statutes. (para 70)

The role of the International Advisory Committee for Biosphere Reserves as an "independent" body was strongly supported. There was some discussion on increasing interactions between this body and the Council, perhaps through the representation of the IACBR at the Council sessions. (para 71)

The Council requested the Secretariat to prepare up-to-date versions of the following three documents to facilitate the implementation of MAP: (i) Statutes of the MAB-ICC; (ii) Rules of Procedures of the MAB-ICC; and (iii) the Statutes of the International Advisory Committee for Biosphere Reserves, for discussion and finalization at its 22nd session of the Council. It also asked the Secretariat to prepare for the same session revisions to the Statutory Framework of the WNBR as well as a document on the implementation of MAB and WNBR activities at the national level, including guidelines for establishing MAB National Committees. (para 73)

The Council adopted a text on the “MAB Programme for Sustainable Development” that highlights the importance of ecosystem-specific networks on mountains, coastal zones, and small islands, and MAB research, capacity-building and educational projects in marine ecosystems, forests, drylands, urban areas, wetlands, and agro-ecosystems. Networking at ecosystem, regional and sub-regional levels and context specific sustainable development learning in biosphere reserve land/seascapes shall constitute the two principal MAB modalities for supporting sustainable development in Member States. (para 74 and Annex 4)
The Council approved the proposed approach and timetable for the first evaluation of MAP in 2010, and

requested the Secretariat to submit a progress report to the 22nd session of the Council. (para 76)

The Council requested the Secretariat to make a comparison between 2004 and 2009 concerning the evolution in the total number of biosphere reserves, the total areas they cover, as well as the total budgets allocated to MAB under the UNESCO Regular Programme. This comparative table, to be broken down according to regions, should be sent to all ICC Member States and Observer States attending the 21st session of the Council in Jeju Island, Republic of Korea as well as any other countries that may request it. (para 77)

The Council endorsed the Secretariat's initiative to carry out a feasibility study on the future legal status of ERAIFT in order to ensure ERAIFT's autonomy and sustainability. (para 78)

The MAB-ICC decided that the age limit of candidates for the MAB Young Scientists Award shall be fixed at 40 years of age for all applicants; to be eligible for the MAB Young Scientists Award, the proposed research projects shall have to be undertaken in a designated biosphere reserve or a potential biosphere reserve; the number of candidates that each MAB National Committee can submit each year to the MAB Secretariat shall be reduced from three to two. (para 82)

The Council requested the Secretariat to investigate, in collaboration with selected UNESCO Chairs, appropriate UNESCO Category II Centres and other partner institutions, the feasibility to launch a collaborative programme for capacity building in sustainable development research and development in biosphere reserves that would generate well-designed and content-rich case study materials and other pedagogic resources during the last five years (2005-2014) of the DESD. (para 87)

Many ICC Delegates expressed support for the South-South Cooperation Network for the Humid Tropics and expressed the wish that similar networks be considered for other ecosystems of the world. ICC Delegates of countries such as Sri Lanka indicated the wish to be part of the South-South Cooperation Network for the Humid Tropics. (para 89)

The Council decided unanimously to create a Global Network of Island and Coastal Biosphere Reserves Contributing to Action on Climate Change and Sustainable Development under the auspices of Spain and the Republic of Korea as one of the MAB Programme thematic networks. (para 95)

The Council decided that it should meet every year to decide on new entries to the World Network as well as on other important matters such as extensions/modifications to biosphere reserves already included in the World Network, periodic review of biosphere reserves, MAB Young Scientists Awards, Michel Batisse Award for Biosphere Reserve Management, etc. The Council decided that in the future the venue for its annual sessions would alternate between Paris and interested Member States and that its 22nd session would be convened at UNESCO Headquarters (Paris) during 2010. The Council requested that the Secretariat in consultation with Members of the Bureau propose dates for the 22nd session of the Council in 2010 to all ICC Members before 1st December 2009. (para 97)

Recognizing that the 40th anniversary of the MAB Programme will be commemorated in 2011, the Council recommended that the Secretariat consult with ICC and Observer Member States, including their Delegations at UNESCO Headquarters, to explore interest among Member States to host the 23rd session of the MAB-ICC and associated events to commemorate the 40th anniversary of MAB. (para 98)

The Council instructed the Secretariat to co-operate with the Indonesian authorities in organizing a successful first meeting of the important South-South Co-operation initiative in 2010 in connection with the International Year of Biodiversity. (para 99)

According to these Recommendations we have to prepare the EABRN Plan of Actions for their implementing and I am sure some more interesting and useful initiatives will be presented at this meeting.

Finally I would like to inform the participants that at the 35-th session of UNESCO General Conference 13 new members of ICC MAB have been elected and three states (Austria, Lebanon. Ethiopia) have been re-elected for a new term. Using this opportunity, as a vice chair of ICC MAB, I wish to congratulate new members of ICC and particularly the Democratic People's Republic of Korea and Republic of Kazakhstan. I am sure that the Republic of Kazakhstan after creating biosphere reserves at its territory could make important addition to our network and facilitate links of EABRN with other countries in Central Asia already having biosphere reserves.

Lessons Learnt from Using System Thinking for Development of Biosphere Reserves, Vietnam

Ass.Prof. Dr. Nguyen Hoang Tri
Director, Center for Environmental Research and Education (CERE)
Hanoi National University of Education
Secretary General, Vietnam MAB National Committee.

Abstract

As seen the biosphere reserve as a system, its structure and relationship of its components are presented by system thinking. The report presents lessons learned from using the system thinking in designating and managing the biosphere reserves as learning laboratories for sustainable development. The system thinking is used for zoning three areas of biosphere reserve (core, buffer and transition areas) and implementing their functions. A dynamic model is developed for promoting partnership development among local stakeholders and finding the leverage point to improve the biosphere reserve system in the case of Vietnam's biosphere reserves. Experiences for successful and un-successful practices are also discussed to find solutions in sustain the biosphere reserve system. The report is also raising a critical issue of activating customary rights in managing biosphere reserves as learning laboratories for sustainable development in local communities of ethnic minorities as a leverage point for promotion of community participation.

Introduction

During the last decade, there are eight biosphere reserves of Vietnam included in the World Network of Biosphere Reserves. They are in the Vietnam National Network of Biosphere Reserves (VNBR) with total area of 3,825,807 ha and population of 1,088,156 people. Each biosphere is considered as a modality for sustainable development. As a system, the biosphere reserve is designated by integration of various components representing relationships between nature and human including critical issues and possible solutions in sustainable management. System thinking is used for designation at individual biosphere reserve as well as the whole its network.

In 2000, Can Gio Mangrove Biosphere Reserve, Ho Chi Minh City was approved in January 21, 2000 with total area of 71,370 ha and population of 57,403 people. The Can Gio mangrove is rehabilitated with both natural and man-made forests as "Green lung" of Ho Chi Minh City with industrial and services centers of 6 million people, especially providing a buffer to mitigate impacts from the climate change and sea level rise.

In 2001, Cat Tien Biosphere Reserve belonging to 4 provinces: Dong Nai, Binh Phuoc, Dac Nong and Lam Dong was approved in November 10, 2001 with total area of 728,756 ha and population of 170,500 people. This site possesses a high diversity of nature and culture, especially various endangered species, especially Rhinoceros. It is a site of multiple designation of National Park, Bau Sau Ramsar Site, proposed World Natural Heritage and Biosphere Reserve.

In 2004, there are two biosphere reserves approved in December 02, 2004 by UNESCO. Cat Ba Archipelago Biosphere Reserve (Cat Ba Biosphere Reserve) has a total area of 26,241 ha and population of 10,673 people. The Cat Ba langur that was very endangered with 20 individuals is conserved and reproduces 6 babies during 5 years. The Provincial Trans-boundary Biosphere Reserve of Coastal Wetlands in the Red River Delta (Red River Delta Biosphere Reserve) covers a boundary of five districts: Thai Thuy, Tien Hai (Thai Binh Province), Giao Thuy, Nghia Hung (Nam Dinh Province) and Kim Son (Ninh Binh Province). It has a total area of

105,557 ha and population of 128,075 people. It possesses national park, nature reserve and Ramsar site with important globally species of migratory birds and mangroves used for seadike protection during typhoons, storm surges and sea level rise derived from climate change.

In 2006, Kien Giang Biosphere Reserve belonging to Kien Giang province was approved in October 27 ,2006 with total area of 1,118,105 ha and population of 352,893 people. It has three core zones of various habitat and biodiversity from coastal and island to flood swamp forests, from coral reefs and dugong to karst mountain with endangered langur species.

In 2007, Western Nghe An Biosphere Reserve was approved in September 18, 2007 with total area of 1,303,285 ha and population of 473,822 people. It has three core zones in the remote areas of the country. A green belt is established to link the three core zones, in which there are verge forests in connection with Lao's frontier lines.

In 2009, there are also two biosphere reserves approved in May 26, 2009. Cu Lao Cham – Hoi An Biosphere Reserve has 33,146 ha and 83,792 people. It possesses a Marine Protected Area (MPA) and the Hoi An ancient city designated as the World Cultural Heritage. The linkages of marine biodiversity and cultural values are integrated in management of its identity. Mui Ca Mau biosphere reserve is located in the Southmost area of the country with the last ecotone of luxury mangroves and Melaleuca forests. It has a total area of 371,306 ha and 170,321 people. Mud-flats and mangroves are creating a big nursery of marine-life for a vast area of the Gulf of Thailand.

The total area of all biosphere reserves is 3,825,807 ha, in which there are only 347,708 ha in core areas or 9.08 % as shown in table 1. This means that the biosphere reserve is not only protected area but much more development and logistical support function. The relationship between conservation and development should be considered as dynamic system of complexity, changes and learning processes in sustainable development (UNESCO, 2005).

Table 1: Area and population in biosphere reserves of Vietnam

Biosphere Reserves	Core zone(ha)	Buffer zone(ha)	Transitionzone (ha)	Total(ha)	People
Can Gio Biosphere Reserve	4,721	37,339	29,310	71,370	56,403
Cat Tien Biosphere Reserve	71,920	251,445	403,433	726,798	170,500
Cat Ba Biosphere Reserve	8,500	7,741	10,000	26,241	5,243
Red River Delta Biosphere Reserve	14,167	36,849	54,541	105,557	128,075
Kien Giang Biosphere Reserve	36,935	172,578	978,591	1,188,104	353, 893
Western Nghe An Biosphere Reserve	191,922	503,270	608,093	1,303,285	473,822
Mui Ca Mau Biosphere Reserve	17,329	43,309	310,868	371,306	170,321
Cu Lao Cham – Hoi An Biosphere Reserve	2,214	6,045	28,887	33,146	83,792
Total	347,708	1,058,576	2,423,723	3,825,807	1,088,156
Percentage	9.08	23.66	63.35	100	

Using System Thinking in Zonation of Biosphere Reserves

The zonation of biosphere reserves plays an important role in defining three functions of biosphere reserves and create appropriated coordination mechanisms for sustainable management (UNESCO, 1995, 1996). The spatial zonation for Vietnam's biosphere reserves is based on the arrangement of existing international and domestic designations as components of the integated system. It is done in detailed cases of zonation of biosphere reserves includes core, buffer and transition zone.

The core zone: This is a legally constituted core area or areas devotes to long-term protection, according to the conservation objectives of the biosphere reserve, and of sufficient size to meet these richness, unique natural features of exceptional scientific interest. There is possibly one or more core areas, which are securely protected sites for conserving biological diversity, monitoring minimally disturbed ecosystems, and undertaking non- destructive research and other low-impact uses (such as education), natural or minimally disturbed ecosystem, centre of endemism, genetic…

We consider national protected areas and following international designations to include into the core zones, including national parks or nature reserves within the national protected areas, IUCN Ramsar sites, UNESCO World Natural Heritage and ASEAN Heritage Parks.

Ramsar sites or wetland conservation areas is included into the core zone of biosphere reserve, because they are considered as internationally importance to support vulnerable, endangered, or critically endangered species or threatened ecological communities. It includes populations of plant and/or animal species important for maintaining the biological diversity of a particular biogeographic region, plant and/or animal species at a critical stage in their life cycles, or provides refuge during adverse conditions. It is also a source of food for fishes, spawning ground, nursery and/or migration path on which fish stocks, either within the wetland or elsewhere, depend.

The World Natural Heritage is also included into the core zone of biosphere reserves, in practice the nomination of boundary of World Natural Heritage is also the same with national park. The natural criteria of the World Natural Heritage presents geological and physiographical formations and precisely delineated areas which constitute the habitat of threatened species of animals and plants of outstanding universal value from the point of view of science, conservation or natural beauty. The ASEAN Heritage Parks is included the core zone because of having ecological completeness, representativeness and naturalness with high conservation important, legally gazetted conservation areas with additional criteria of uniqueness, high ethno-biological significance and importance for endangered or precious biodiversity Tran boundary.

The spatial zonation of core zones give an opportunity to focus on the protection of landscape centres of endemism and of genetic richness or unique natural features. In the case of Western Nghe An Biosphere Reserve, there are 3 core areas (Phu Mat National Park, Pu Huong and Pu Hoat Nature Reserves) and a green corridor to link the three core areas. A cluster biosphere reserve with multiple core areas often responds better to topographic realities and can give credit to various locations that have high conservation value, but which are scattered throughout a wider area, for example island forests, corals and sea-grasses and dugong in core area 1 (Phu Quoc National Park), swamp forest in core area 2 (U Minh Thuong) and limestone mounts and coastal mangroves in core zone 3 (Hon Chong Nature Reserve) in the case of Kien Giang Biosphere Reserve.

Buffer zones: we identify clearly buffer zone, which usually surround or adjoins the core areas, and this is used for cooperative activities compatible with sound ecological practices, including environmental education, recreation, ecotourism, and applied and basic research; and experimental manipulation to develop sustainable development, traditional; land use, restoration of degraded ecosystems. All core areas are fully

surrounded by buffer zones in order to enhance their protective roles for environmental conservation. In terms of conservation ecology, buffer zones link core areas in a corridor-type of pattern to the extent possible expanding wildlife habitats.

In all buffer zones, there are cooperative activities relate to both, the core zones and the transition zones. In case of Cat Ba Biosphere Reserve, their role is to minimize any negative and external effects of human-induced activities on langur conservation in core areas, while some economic activities that are in line with conservation objectives are permissible in buffer zones, such as honey-bee keeping, recreation and ecotourism linked with environmental education, and restoration and/or rehabilitation of degraded ecosystems. It contributes significantly to environmental conservation as well as to sustainable development through creation of production forests as afforestation belts around core zones that will expand wildlife habitats and will generate income from timber and non-timber products in the long run.

In Red River Delta Biosphere Reserve, there are activities of community-based ecotourism initiated by NGO-MCD (Marine-life Conservation and Community Development) in cooperation with local communities which underlines the buffer function of conservation of migratory birds in core zones. As the degree of human intervention is higher in buffer zones than in core areas, buffer zones may not necessarily need legal protection, or they have a lesser degree of legal protection than core areas.

Transition area: We use the concept of "Development for Conservation" for the transition area and define this as flexible area of co-operation, which contain a variety of agricultural activities, settlements and other uses and in which local communities, management agencies, scientists, non-governmental organizations, cultural groups, economic interests and others. It is outer area where sustainable resource management practices are promoted and developed. The transition areas are the most loosely defined spatial elements of a biosphere reserve.

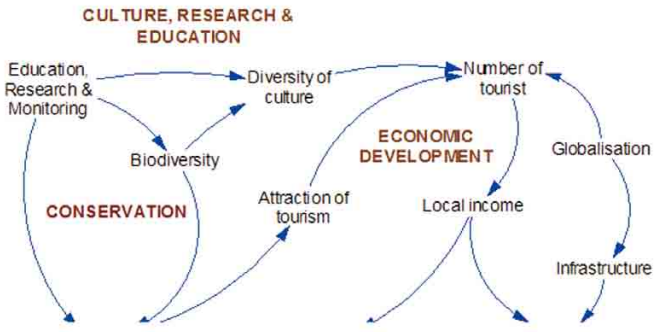


Fig. 1: Linkkages of three function of the biosphere reserve

INTERRELATIONSHIP OF THREE FUNCTIONS OF BIOSPHERE RESERVES

As areas of cooperation, the transition zone of Can Gio Biosphere Reserve is characterized by multiple use zones, primarily geared towards promoting sustainable development. It is area where people live and practice their sustained livelihoods. The transition zone is directly marked by human impact on natural resources and different user groups and stakeholders including agriculture, aqua-culture and salt-making etc. to work together in order to manage and sustainably develop the area's resources. Thus, the transition zone is the spatial unit in a biosphere reserve where sustainable development is demonstrated and practiced on the ground.

Besides the transition areas are the demonstration site where economic development is based on considerate

and preservative use of natural resources. Transition zones also have a conservation value. There are different agro-ecological systems, hedges and groves, riparian vegetation and habitats, high species diversity in fringe areas (or ecotones) of different mosaic-types of biotopes, urban green areas, and zoological and Forestry Park in Can Gio Biosphere Reserve that participate testify to high biological diversity at the species level. Transition zones are not only designated as sustainable development areas in management plans, but are also noted for their conservation value. This will provide an added value to the overall designation of a biosphere reserve.

In terms of establishing management plans for transition zones, it is integrated within the master plan of local authorities or regional development strategies in a predefined spatial context that is applicable for the overall biosphere reserve, as shown in fig. 1. Any management authority at the local level of the country needs to plan in (Batisse,1986; Ishwaran,1994). The spatial extent of the transition area are clearly delineated in nomination of all new biosphere reserve proposals and outlined in the periodic review of biosphere reserves, as shown in fig.2 .

Cross-cutting items in functional zonation of biosphere reserves

We consider intangible values designated by UNESCO and other domestically and internationally recognitions as cross-cutting items from core arrears to transition zones or from conservation to development and versus, as presented in table 2. Intangible cultural heritages are respected in whole biosphere reserve area, including the practices, representations, expressions, knowledge, skills – as well as the instruments, objects, arte facts and cultural spaces associated therewith – that communities, groups and, in some cases, individuals recognize as part of their cultural heritage. This intangible cultural heritage, transmitted from generation to generation, is constantly recreated by communities and groups in response to their environment, their interaction with nature and their history, and provides them with a sense of identity and continuity, thus promoting respect for cultural diversity and human creativity.

In fact, the intangible cultural heritage is also originated and created from the nature or relationships of people and nature with customary rights, instruments, as well as with the requirements of mutual respect among communities, groups and individuals, and needs for sustainable development. In the case of Nghe An Western Biosphere Reserve, the intangible values of decade ethnic minorities, especially Thai and Dan Lai ethnics are always respected and encouraged by linking natural conservation with safeguarding intangible values in sustainable development of biosphere reserves. The customary rights of natural use and cultural practices are respected for better conservation of biodiversity.

Regarding the link of natural and cultural landscapes in biosphere reserves, we include them as cross-cutting item as being represent the "combined works of nature and of man". In the case of Cu Lao Cham – Hoi An Biosphere Reserve where the Hoi An Ancient City-the World Cultural Heritage is arranged in transition zone, where they are illustrative of the evolution of human society and settlement over time, under the influence of the physical constraints and/or opportunities presented by their natural environment and of successive social, economic and cultural forces, both external and internal. Cultural landscapes that are practiced in Cat Tien Biosphere Reserve include diverse interaction between humans and the natural environment with both organically evolved and associative cultural landscape.

In almost cases of transition areas of biosphere reserves, we consider cultural heritages as the sites of protection and tourism development under control by local authorities underling management plan in transition zone that local people can raise benefits from culture and eco-tourism of architectural works, structures of an archaeological nature, inscriptions, cave dwellings with outstanding universal value from the historical, aesthetic, ethnological or anthropological points of view.

Table 2: Zonation of biosphere reserves using existing domestic protected areas and international designations.

		Zonation of biosphere reserves		
	Designation	Core zone	Buffer zone	Transition zone
Domestic designation	National Park	Strict Protection area	Buffer and ecological re-habilitation areas	Administrative and services area
	Nature Reserve	Strict Protection area	Buffer and ecological re-habilitation areas	Administrative and services area
	Historical and cultural site		Whole site for eco-tourism and recreation purposes	
International designation	ASEAN Heritage Parks	Whole site for conservation purposes	Buffer and ecological re-habilitation areas	Administrative and services area
	Ramsar sites	Strict Protection area	Buffer and ecological re-habilitation areas	Administrative and services area
	World Natural Heritage			Protection and tourism purposes
	World Cultural Heritage			Protection and tourism purposes
	World Intangible Cultural Heritage	Safeguarding the heritage in identification, documentation, research, preservation, protection, promotion, enhancement, transmission through formal and non-formal education in three zones		
	Geo-park			

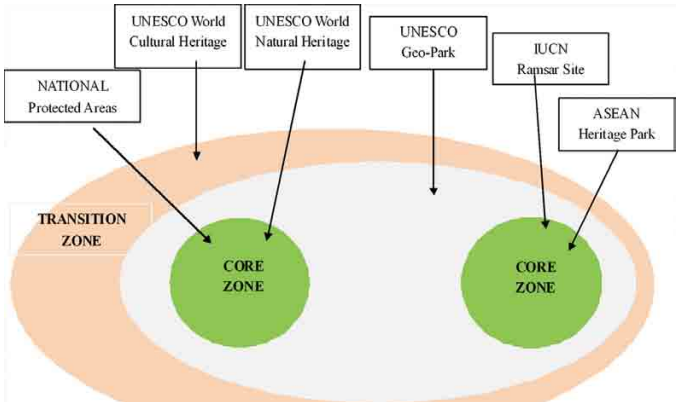


Fig 2. Integration of existing national and international designations into biosphere reserves

System Dynamic and Sustainable Management of Biosphere Reserves

We consider that the use of biosphere reserves as modalities of sustainable development is much more coordinative and collaborative of complexity and changes as dynamics of the system than management as usual. It is a leverage point for improving the system. It coordinates the existing institutional settings and regulations to make biosphere reserves more effective in integrating conservation, sustainable development and knowledge generation through a holistic zonation pattern and management scheme. All biosphere reserves are managed by people committees of provinces that are an administrative level mastering and coordinating all sectors in their province including land-use change, conservation and social-economic development. Any conflicts between conservation and development will be solved by the province's people committee, as shown in fig 3.

The provincial Governments promote biosphere reserves as their modalities of sustainable development by integrating environmental conservation, social-economic development and knowledge generation on ecosystem functioning, human-environment interactions and human wellbeing. At the site level, biosphere reserve managers integrate the three functions through a multiple land use system for environmental conservation, social-economic development, and knowledge generation, including environmental research, monitoring, public awareness and education. During design and implementation of management plan, the coordination and collaboration in each biosphere reserve are based on functions in each zone.

We consider that core areas should be made known as "conservation for development" areas. The coordination is based on existing policies is to ensure long-term protection of the environment and its biological diversity according to Government's Decree No. 181/2004/ND-CP, dated 29/10/2004 and the Guidance of the implementation of Land Law of 14 chapters and 186 regulations. The core areas are legally constituted to meet conservation objectives also for future generations by provision of ecosystem services which are essential to ensure sustainable development (e.g. carbon sequestration, soil stabilization, health services through the supply of clean air and water, recreation for physical and spiritual well-being, income derived by eco-tourism) (Socialist Republic of Vietnam, 2004: Sustainable Development Office/Vie project/01/021/2006; Socialist Republic of Vietnam, 2006).

Buffer zones are coordinated to minimize any negative and external effects of human-induced activities on the core areas and promote restoration and rehabilitation of degraded lands in practice and economic activities that are in line with conservation objectives permissible and encouraged, such as recreation and eco-tourism linked with environmental education, and environmental rehabilitation measures. Buffer zones are not need legal protection as core area. However, it is within the master plan of provinces, including land-use and socio-economic plan.

Putting into practice "development for conservation" as learning laboratories and demonstration sites, we consider that the primary function of transition areas is socio-economic development. They are characterized by multiple land use systems (agriculture, settlements, physical infrastructure etc.) and are managed in

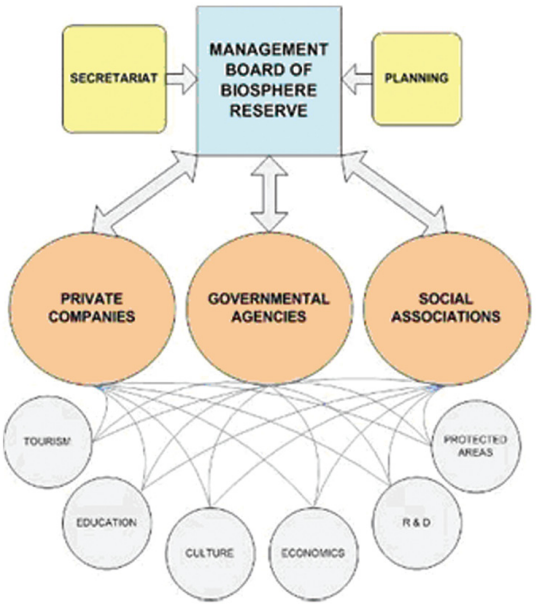


Fig. 3: Structure of coordination mechanism withstakeholder involvement

provincial master-plan, where the Strategic Environmental Assessment (SEA) and Environmental Impact Assessment (EIA) as a way that adverse human impacts on the environment are mitigated through on-going consultation processes among different stakeholders and interest groups. These areas also follow current regulations of Government to maintain environmental and biodiversity conservation in human transformed landscapes.

In all biosphere reserves, the transition areas are spatially delineated, sufficiently large to encompass different land use systems and managed through a holistic management concept including all three spatial units of a biosphere reserve, i.e. core areas, buffer zones and development areas.

The collaboration and coordination of biosphere reserves focus on our initiative of using conservation effectiveness from national and international designation for socio-economic development and results of development to be used for conservation. The quality economy is introduced and actively implemented by each biosphere reserve. It related a series of activities on assessment, designating and labeling for qualified products and services, investment and economic environmental friendly development and ecotourism in biosphere reserves. These qualified products and services originate from biosphere reserves bring a signal of both ecosystem health and improved livelihoods for local people to effective implementation of conservation and sustainable development.

The local companies, factories and services propose their qualified product and services to use the logo of biosphere reserves as their trademark or brand and a committee of evaluation led by local Government is set-up and issues their decision for registration after consultation with various stakeholders including producers and consumers. The quality economy is developed based on registration to use product brand or trademark with logos of biosphere reserves to be protected by legal protection of the country. The Hai Phong City has registered rights of intellectual properties with logo of the Cat Ba biosphere reserve, issued by the Department of Intellectual Properties, MOST, registration No. 21376/QĐ-SHTT dating October 27, 2008 for 5 product groups including fish sauce, bee-honey, tourism-transportation services, recreation bases and hotels/restaurants. The Kien Giang Province has started the process for Kien Giang biosphere reserve.

Benefits from the quality economy, especially registered products and eco-tourism promote the improvement of local livelihoods and then income sources. These revenues invest to enhance their quality of life, including education, social welfares and awareness of environmental protection. Thus, better conservation of the nature give more opportunities for making economic benefits and the successful reduction of poverty will give better conservation in both awareness and practices.

Conclusion

Systems thinking provide a scientific methodology for complex problem solving (i.e., policy analysis, strategic thinking, conflict resolution, restructuring, etc). It provides a ‘language’ for strategic thinking and multi-stakeholder problem solving. In a nutshell, Systems Thinking is the science of integration. A system thinking is a scientific approach that starts with the whole by providing a holistic approach to complex policy and social issues. As seen a biosphere reserve as a system, their components include various sectors in sustainable development or stakeholders in the field. Using system thinking in management of biosphere reserves is to find a better solution in coordination and collaboration or “leverage point” to improve the complex system. We are applying this approach to improve the activities of the biosphere reserves and its network.

For facilitating the coordination and collaboration in individual biosphere reserve, the MAB National Committee develop basic guidelines for identifying the stakeholders concerned for the three zones, as well as for the three functions of biosphere reserves, and knowledge of social sciences is crucial for gaining support

from the local communities. National and local authorities make a greater effort to improve interdisciplinary studies in biosphere reserves to involve all stakeholder groups, ensure equal participation of these stakeholder groups, and improve technical capacity to design, raise funds, and implement biosphere reserve activities.

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Wuyishan Biosphere Reserve of Fujian - The Model Area for Sustainable Developing - the exploration for achieving a win-win situation of protecting and developing

Tang Zhong
Administrative Bureau of Wuyishan National Nature Reserve of Fujian, Wuyishan, China 354300

Abstract

Wuyishan Biosphere Reserve in Fujian, which has a rich biological diversity, is the national ecological model area. We have scored fruitful results of construction during the past 30 years. In order to develop the community with the premise of protection, considering the vital interests of local residents, we established four concepts of ecological protection, innovated ten actions for protection and development, created a mode of "10% development and 90% protection". The resource conservation of the Reserve and the community economic development have entered a benign circle. We founded a Joint Protection Committee whose main body are the local residents. The Joint Protection Committee has made significant achievements of fireproofing and community harmony. We actively carry out basic science researches and cooperate with a number of research institutions. The researches on high-yield bamboo and the black tea made a significant contribution to the two pillar industries of community. The implementation of GEF project enhance management capability of local residents and staff of the Reserve.

Introduction of Wuyishan Biosphere Reserve

Wuyishan Biosphere Reserve was established in April 1979, which was approved as a national nature reserve by the State Council in July 3, 1979. It was set up under the instructions of Deng Xiaoping, the chief leader of the reform and opening up of China. Wuyishan Biosphere Reserve is located in the north of Wuyi Range, which is the highest sector of the Mountains. It is among the three counties: Wuyishan, Jianyang and Guangze. And it border on Shaowu City of Fujian and the Yanshan County in Jiangxi Province. The geographical coordinates of the Reserve is 27 ° 33'~27 ° 54 ' N, 117 ° 27'~117 ° 51' E. Huanggang peak, the main peak of the Reserve with a altitude of 2158 meters, is the highest peak in the southeast mainland of China, known as "roof of east China". The total area of the Wuyishan Biosphere Reserve is 56527 hm^2, of which the core area of 29272 hm^2 accounting for 51.8%, the buffer zone of 12395 hm^2 accounting for 22.0%, the transition area of 14860 hm^2 accounting for 26.2%.

Wuyishan Biosphere Reserve is not only rich in species diversity and ecosystem diversity, but also in genetic diversity, known as "the world's biological window", "birds' paradise," "snake's kingdom" and "insect world" reputation. The types of vegetation are rich in the Wuyishan Biosphere Reserve, with 170 association groups that belong to 57 formations of 11 vegetation types. There are 2466 species of higher plants that belong to 1028 genera of 267 families, and 840 species of lower plants, 484 species of vertebrates (including 71 species of mammals, 260 species of birds, 73 species of reptiles, 35 species of amphibians, 45 species of freshwater fish, respectively accounted for 63%, 48%, 63%, 73% and 19% of the Fujian provincial total), and 4635 species of insects. The forest of Tsuga tchekiangensis, which has been exquisitely preserved with an area of about 100 hm^2, is precious.

There are a lot of rare and endangered species. 28 species of the plants such as Ginkgo biloba, Taxus wallichiana var. mairei and Bretschneidera sinensis are rare and endangered species or threatened species. 20 species of the plants such as Taxus wallichiana var. mairei and Glyptostrobus pensilis are key wild plants under state protection. There are 57 kinds of key wild animals under state protection like Tragopan caboti and Teinopalpus aureus. 101 kinds of birds are contained in the international protection net of migratory birds.

Guadun and Dazhulan in the middle of the Reserve have been the world-famous biological origin of type specimen since the middle of 19th century. During the recently one hundred years, the Chinese and foreign biologists have discovered nearly 1000 type specimens of new species (including the new subspecies). There are four native villages in the Reserve. They are Tongmu Village of the Wuyishan City, Aotou Village, Dapo Village and Guilin Village of the Jianyang City with a total of 32 settlements. 589 households with 2453 residents reside in the Reserve. The Reserve is surrounded by four counties (cities), 6 townships (towns), 13 villages with 10694 residents. The Wuyishan Biosphere Reserve has been established for 30 years. We gradually explore a way for sustainable development with Chinese characteristics. The Reserve has been named the national ecological model zones by the State Forestry Administration. So far, it was the only one in China which is both a World Biosphere Reserve and the Nature Reserve of natural and cultural heritage of world.

Coordinate the relationship between protection and development, and promote community development based on protection

Challenges that the Wuyishan Biosphere Reserve faced with: Biosphere reserves, especial those in developing countries, is generally faced with the principal contradiction between protection and development. The Wuyishan Biosphere Reserve is set up in order to save the seriously threaten biological treasure at that time, and to protect the world-famous biological type specimen producing area - Guadun and Dazhulan. Thus, during the early establishment, the Wuyishan Biosphere Reserve is protected strictly. Residents cannot collect any trees and herbs in the Reserve. Wuyishan Biosphere Reserve is typical of southern China with mainly collective forest, 60% of which is collective forest. The original area was inhabited by more than 10000 villagers of Wuyishan City, Jianyang City and Guangze County. Villagers who live near mountains do not have any farmland. They have to live on "mountains". The livelihood of villagers is cut off by strict protection measures, which triggered a sharp confrontation between residents' profit and protection. As a result, protection for the purpose of harmony and sustainable development face with a serious challenge.

Four concepts and ten actions for dealing with the relations between protection and development

Four concepts: Biosphere reserves should promote community development under the premise of protection. Biosphere reserves should reinforce the support of the communities. The common mode to implement absolute protection used around the world is to move all the residents out of the Biosphere Reserve, which is also the goal of the Wuyishan Biosphere Reserve. But there are some difficult on our way: One of them is that the residents are lack of consciousness; The second is the finance of government can't offer them necessary economic compensate; The third is laws and regulations do not specify the time of migration.

So for the purpose of establishing a harmonious community and sustainable development, the Wuyishan Biosphere Reserve created a mode of "10% of development and 90% of protection". Collective forest of bamboo and tea of 5733 hm^2 (about 10% of the total area) in the transition area was classified as fixed production plot. The fixed production plot should be used restricted by residents. The yield activities of the residents are arranged reasonable. So the mode can provide sufficient income for residents. To this end, we learned from the vital interests of the community residents and established four concepts of ecological protection: Building ecological reserve together; Managing the reserve with the community; Sharing risk; and Sharing resources. We proposed ten actions for protection and development.

Action 1 – to restore the destroyed ecosystem: Firstly, we support the residents to restore the destroyed ecosystem actively by supporting the policy for 30 years. Now, the rate of forest coverage of Wuyishan Biosphere Reserve reaches 96.3%, over the beginning by 4.2%. And the forest accumulation increases

by 22.8% than the beginning. 29000 hm^2 native regions in the subtropical forest ecosystem has been well protected, it is possessed with typicality, diversity and systematic of vegetation types in subtropical regions, and includes all subtropical vegetation types of China, which is sole in the same latitude band of world. Best ecosystem has become an ecological symbol of the Wuyi Mountain as well as Fujian, known as the "Green Pearl of the Western Shore of the Taiwan Straits".

Action 2 – to solve the problem of livelihoods for community residents: We receive the agreement of Forestry Department to ask resident to collect the collapse woods, under the government's help on transportation and sale, to improve the local economic situation.

Action 3 – To solve the villages' economical problem: After the Reserve been built, the villagers lost their economic mainstay due to forbidding logging on natural forest. To solve the problem about livelihoods of residents and the collective economy of villages, we allow residents to take out live timber from collective forest after rigorous approval. The Tongmu village in the Reserve became the star and well-off village in Fujian Province later.

Action 4 – To develop the bamboo industry:It was forbidden to cut natural forests throughout China in 1998. The income of residents and collective economic are faced with new challenge. We use the advantages of abundant bamboo resources, under the agreement of Provincial Government, arrange the local residents to grow the right amount of bamboo and issue the cutting licenses of bamboo to further improve the resident's life.

Bamboo is a kind of highly renewable forest resource with a 6-year growth cycle. Wuyishan Biosphere Reserve is rich in bamboo resources with a total accumulated amount of 21 million individuals, which are mostly distributed in the transition area, providing a harvest of about 3 million individuals each year. While providing a policy and technical to support, we also provide follow-up service timely of each link in the bamboo production. During the past two years, in accordance with the provincial requirement, we cut some tax of the bamboo management, free the fee of resource protection, and constantly improve the operating efficiency of bamboo.

We guided the deep processing of bamboo. Bamboo production was once the community's pillar industries in the protected area, making great contributions to the construction and development of the community, while accompanied with the pollution. We guided the transformation of industry and reduced the dependence on bamboo industry. Transforming from producing bamboo mat and chopsticks to producing bamboo floor products not only improve value-added products, but also reduce the difficulty of handling byproduct. Especially the processing residues which used for fuel was processed for bamboo coal and other production. It has solved the pollution problems almost.

We carried out a protection project of bamboo called “red line drawn project”. To fix bamboo production area, to avoid degradation, purification, and expansion of bamboo, the Joint Protection Commission organized the villagers to carry out the "red line drawn project" of bamboo by symposium. They made a significant mark on the broad-leaved trees of the edge of bamboo producing areas. To register on file for future reference, they marked the areas on basic map based on the topographic maps and GPS, in order to make sure bamboo production would not exceed the red line. This project solved the problem caused by bamboo expansion, providing a satisfactory answer to the experts’ oppugn on bamboo expansion. For improving the productivity of bamboo forest, we established a high-yield bamboo model area. Thousands acres of high-yield of bamboo model area were established in Dazhulan. Since 1987, near natural manage method was taken on this model bamboo forest, no reclaim and medication, grasses and shrubs was cut once every two years, scientific harvesting protocol developed. After 5 years management, the density of bamboo increased from 97 per mu to 143 per mu, the DBH increased from 9.4 inch to 12.7 inch, the annual production increased from 168 kg per

mu to 747kg per mu. The increase of production and quality provides a scientific basis for high-performance bamboo cultivation. This model has been spread an area of 200 hm^2 in Dazhulan and to more area the in the Reserve, because the economic efficiency has greatly been improved. The actual annual normal production of bamboo is around 500000 individuals, which bring an annual income of 15 million RMB.

Action 5 – To develop the tea industry: Bohea had been worldwide renown. We encourage the villagers in the transition area to carry out the contracted operations of collective-owned things, like bamboo and tea. As a matter of fact, the resident should realize the necessity of protection for their immediate interests. To establish ecological tea garden, from 2008 to 2009, we apply a fund of 3 million for the development of ecological tea industry for Tongmu, Aotou, Changjian and other villages to develop black tea industry. We run experimental tea factories together with the community, and improve the ecological Bohea brands. There have been many well-known brands of Bohea such as Wuyihong, Tongmu, Yuanzheng, Liangpinji and Junde. The black tea has become a pillar industry instead of bamboo.

Table 1 A comparison of 2005 and 2009 about the area of tea graden, the price, the production and income of tea

	2005	2009
The price of fresh leaves (yuan/kg)	3	50
The price of crudely tea (yuan/kg)	30	260
The area of tea graden (hm2)	500	600
The prodution of tea (t)	70	130
The prodution of tea leaves (kg/hm2)	450	1125
Total income of tea(ten thousands yuan)	220	3100
Income per head of the community(yuan)	880	12000

Action 6 – To implement the ecological compensation system: Wuyishan Biosphere Reserve had joined the ranks of natural forest protection project in the pilot. Wuyishan Biosphere Reserve also completed the work of registration of certification on forest right totally, and put an end to the history of operating without a license. Through formal implementation of the nationally ecological forest management and protection grants, the residents can directly have benefit, which can reach more than 5.20 million each year, and 2000 RMB per capita. The Reserve has also employed more than 150 villagers to serve as members of ecological forest management and protection, so that more residents directly involve in management and protection work of Nature Reserve. The residents can share the benefits of ecological protection in the management and protection of ecological forest. Wuyi Mountain News reported, "because of the good protection of the Tongmu village, everything becomes more worth. And the villagers feel the eco-village brought about the immediate effect." In fact, the entire communities' residents of Nature Reserve are the same as the villagers in Tongmu village and feel the ecological effects of the valuable gifts.

Action 7 – To develop new technology of beekeeping: Beekeeping is the most important sideline of some local villagers. Rich plant resources and excellent natural environment together provide a unique natural condition for the survival of bees. We conducted a survey of bee breeding status and the distribution of Nectar plants, and found that there are 2466 species of higher plants, including nectar plants that belong to Fagaceae and Theaceae, amount to 224 species. In September 2006, researchers from Wuyishan Biosphere Reserve and the Bee College of Fujian Agriculture and Forestry University investigate the bee resources and popularize the modern feeding techniques of movable and following box. The new technology could improve in producing honey and avoiding damage to queen bee, reducing disease of larvae stage, reducing impurities in honey, and enhancing the quality of honey. The output of movable and following box was 2-3 times the homemade

box. The content of sucrose was 1.2%, far below the new national standard level of 5%, and the average content of fructose and glucose was above 60%. The pure honey was maturity and of high value of edible and medicinal. Therefore, the honey price is 5~10 times the price of ordinary honey. The scientific method of bee breeding has been accepted by the local beekeepers gradually, and is under promotion. According to the existing estimates of nectar resources, the amount of local breeding colony is up to 10000 groups, the output is up to 50000 kg, annual output value can be 5~10 million RMB. This will be economically a new growth point following the bamboo and the tea industry in the community, and have a positive significance on the protection and rational utilization of natural resources.

Action 8 – To increase government support: Approval by the higher and scientific authorities, we adjust function zoning. The adjustment is benefit to not only the protection of natural resources and environment, but also the production and living needs of the residents. The government also gives support to the processing enterprises.

Action 9 – To concern the public welfare: We build roads for mechanized farming, ensure the safety of production and transport, and reduce the costs of production. The infrastructures of Wuyishan Biosphere Reserve, such as program-controlled telephone, cable TV, electric power line, etc., are all open to the local community, to support rural public utilities and enterprise development. We also provide support for the road construction and water projects. We gave great support for both the reconstruction of the village Taolin in Guangze County which was affected by floods and the bamboo production of the village Dazhou in the same county. The total investment is 350000 RMB and discount loan is 50000 RMB. This year, we also afforded 500000 RMB for the construction of village road called “millet line”of Guangze village.

Action 10 – To send heart-warming: According the relatively preferential policies provided by the state, the villagers in protected area can enjoy the benefit in their production and management. And it can add 300000 RMB to village’s income every year. We care for residents in straitened circumstances, and fight for compensation of residents afflicted by natural disaster. We also mobilize the cadres and workers to donate money and goods for them just as their friends and family.

The model of “10% of development and 90% of protection” has been a great success

According to the survey of community section in Wuyishan Biosphere Reserve, region's average income of 9711 RMB per capita was 47.6 times 204 RMB in the initial stage of built area in 2008. The villagers in Tongmu village had income of 10174 RMB per capita, was 43 times 235 RMB in the initially built area, and residents in Aotou village have income of 8229 RMB per capita, which was 63.3 times 130 RMB in the initially built-up areas. Dapo Village’ income of 9532 RMB per capita is 63.5 times 150 RMB in the initially built area. And the real income of the villagers may be even higher than statistics.

However, the community's rapid economic development has not brought damage or added new pressures for Wuyishan Biosphere Reserve. Villagers’ bamboo and tea productions are carried out within the designated production areas of experiment region, and are also under the supervision and guidance of the management of the Wuyishan Biosphere Reserve. The areas involving production account for 10% of the Reserve. Wuyishan Biosphere Reserve allows villagers to use bamboo, tea and other resources on 10% restricted areas which have strong regeneration and small impact on the environment, to develop production. Then it can solve their life problems and establish a harmonious community. In this way, not only the effective protections of 90% remaining areas are strengthened, but also the region's ecological environment and biodiversity obtain good protection. We achieve the purpose of resources conservation and a virtuous circle of community economic development.

The joint protection and its promotion to the community development

The objectives and organizational form of the joint protection

After years of practice, we realized that it is necessary to have the full cooperation and active participation of residents in the community in order to achieve harmonious cooperation between protection and development. The Joint Protection Committee is an important way to mobilize the residents to participate management of Wuyishan Nature Reserve.

In 1994, Wuyishan Nature Reserve established the "Joint Protection Committee of Wuyishan National Nature Reserve of Fujian", which is the first joint protection committee in China. The Joint Protection Committee is led by the Fujian Provincial Forestry Department. The Deputy Director-General of Provincial Forestry Department, who is in charge of work of Wuyishan Nature Reserve, holds the post of director member. The committee is composed of the city and county prefectures around the Wuyishan National Nature Reserve, the forestry sector of relating counties, the villages and towns in or out of the Nature Reserve, etc., total more than 20 units. The Committee established a "Joint Protection Statute of the Commission" and the "Joint Convention on the Protection". The director general of the Nature Reserve Authority holds the post of deputy director member. Under the Joint Protection Committee, five branches following the area of the Nature Reserve were set, forming a linkage of "Joint Protection Commission - Joint Protection Branch - Village". The interaction between the linkage and the "Authority - Management - Checkpoints" three-level management of the Nature Reserve form a three-line network of protection and management.

The core of joint protection is to rule the reserve according to law

Exploration of ruling the reserve according to law is to lead residents to take part in the work of joint protection. In order to make the residents join in the joint protection and attract neighboring communities to participate in the work, the Administrative Bureau of Wuyishan Nature Reserve has actively created some conditions. In this way, the cause of nature conservation will have a strong affinity and attraction, so the residents of community will take the initiative in the joint protection.

The Wuyishan Biosphere Reserve also developed a series of regulations, such as forest fire prevention, and bamboo harvesting, transportation and sales, etc. Awarded by the Fujian Provincial Government in 1990, the "Management Measures of Fujian Wuyishan National Nature Reserve" (the "Regulations") has become the second promulgated provincial rules and regulations, of china. The Provincial People's Congress of Fujian decreed the “Protection Ordinance for Wuyishan in Fujian Province of World and Cultural Heritage” in 2002. Provincial Government of Fujian promulgated the "Opinions about Strengthening Construction of Nature Reserve of Forestry and Solving Issues related to the Production and Life of Local Residents" in 2008 (Min Zheng Wen [2008] No. 1).

Let the community residents become the principle part of the joint protection

Door-to-door drumbeating by pair-share: Participating in joint protection is to protect and build their own homes for residents who live in the protection region, while it is to create an excellent environment for hometown’s development for residents who live in the surrounding area. The transformation from the original object of protection and management into the main body of management of the joint protection will greatly arouse the enthusiasm of villagers to participate in conservation initiative.

Holding symposium which the village cadres are the main: The symposium is an important way to mobilize the residents. The difference between joint protection and generally speaking protection is that

the former changes the origin managed objects into the co-operator of protection procedures. Community residents become the important participators of the joint protection actions, who are the principle part of the joint protection actions rather than those who are managed before.

To make residents positively join into the joint protection, besides some specific activities such as joint defense, protection of forests, investigation or else, it is more important to let residents participate into the actions spontaneously and voluntarily, which needs communicating, organizing and arousing. Community symposium is the essential method to communicate with residents in Wuyishan Nuture Reserve, which also becomes the significant rule of decisions in the area.

Although the population of Wuyishan Biosphere Reserve is only 2453, they spread in more than 40 natural villages, which take an area of more than 100 km^2. It is difficult to operate a residents meeting. Holding a discussion of small village groups by Joint Protection Branches becomes the important information spreading methods between the Nature Reserve and the villagers. After 1998 when it was forbidden to fell natural forests throughout China, the Administrative Bureau of Wuyishan National Nature Reserve began to investigate in every village of the area in 1999, by convening the discussion meetings. The comments of the meetings are spreading the national purpose of forbidding falling natural trees, and discussing the way to construct the protection area with residents. We resolved many conflicts in the production and life of the villagers. Therefore, community symposium becomes an important way to organize the residents to join into the joint protection.

Semi-professional teams for fire suppression: Semi-professional teams for fire suppression are the important part of the joint protection. Currently, 16 semi-professional teams have been organized in the whole community, with 240 team members. These semi-professional fire fighting teams show their outstanding performance in preventing from forest fires, stamping out forest fires for many times. It can be said that semi-professional fire fighting force has not only saved the forest resources in protected areas, but also reduced heavy losses for local economic development.

Employing local rangers to join the work of protection: The Reserve has also employed more than 150 villagers to serve as members of ecological forest management and protection, so that more residents directly involve in management and protection work of the Reserve. This not only provides jobs to local villagers, but also to raise the residents' awareness of loving and protecting the forests.

Coordinating disputes: Under the coordination of the Administrative Bureau of Wuyishan National Nature Reserve and the local township government, Joint Protection Branch also addressed two historical disputes about Bamboo Mountain between the residents, and between the residents' groups, by adopting colloquia and repeating consultations. The disputes don't influence large areas, but deeply influence the solution of the contradiction between protection and development. These contradictions have been existed for many years and with no result even led to access to justice, while now it is solved satisfactorily through the coordination of symposia, which does show the improvement of the level of resident's self-management in the Wuyishan Nature Reserve.

The Main Practices and Effectiveness of Forest Fireproofing

Actively participating in the fireproof work in the neighbourhood: Forest fireproofing is the most important task of joint protection, the reason why Wuyishan Biosphere Reserve can be developed successfully in the recent 30 years is that residents seized the opportunity of development. The weak point is fireproofing when the Reserve is initially set up. And the 1986 fire spread from outside of the zone to the thin woods inside, with a total area of 10hm^2. We actively participates in the fireproof work in the neighbourhood while

it strengthening the fireproof system inside the Reserve. Up to now, the Reserve is still an active participant of the forth joint defence zone in the area of Min, Zhe, Gan. Consequently, it is honoured as “the Outstanding Group of Forest Protection and Joint Defences”.

Strengthening forest fireproofing consciousness of the residents: After the foundation of Joint Protection Committee, the committee sees the forest fireproof as their first job. Residents in the community also recognize that this job is “setting proof for homeland” and they are serious about it. Currently, 16 semi-professional teams have been organized in the whole community, with 240 team members. In 1996 and 1999, two dangerous cases happed separately. However, they are all stamped out in time by these teams, avoiding the fire.

Enhancing government’s responsibility: The four governments of counties and cities adjacent take the fireproofing of Wuyishan Biosohere Reserve’s correspondent popedom into their responsibilities. A fire happened in the boundary of west forestry centre in Guangze County and Wuyishan National Nature Reserse in Oct, 1998. The secretary of county committee and the head of the county arrived at the locale directing the fire fighting. They determined that they would stop the fire from spreading into the National Nature Reserve at any expenses.

Building biological fireproofing forest belts: Under the charge of the provincial and Nanping city’s forestry department, four counties adjacent to the Wuyishan Biosphere Reserve have planned a biological fireproofing forest belt, which is more than 200 kilometers long, surrounding the Reserve. This is a pioneering work either in our country’s nature reserves’ construction or in our forest fireproofing works. 58 kilometers of the fireproofing forest belt and 85 kilometers fireproofing road in the community have already built. The Reserve has built road for patrol total nearly 800 kilometers long, which contained 42 key patrol lines up to 518 kilometers. Because of the effective work, Wuyishan Biosphere Reserve hasn’t experienced a fire for 22 years from 1987 to 2008, becoming the only county’s organization which avoided forest fire for a continuous of 22 years.

Scientific research and its contribution to the community development

Science and technology is the soul of construction and development of biosphere reserves

In mid-June 1979, when the Reserve was to be built, the Fujian Science and Technology Commission held the comprehensive scientific survey, opened a prelude to a 10-year scientific expedition of Mt.Wuyi. The whole expedition work lasted more than 11 years in total. The comprehensive scientific expedition ascertained the background and provided an important theoretical basis for construction and development of Wuyishan Biosphere Reserve. It also clearly pointed out the difficulties in the protection work, and a contingent of scientific and technological backbone was trained subsequently.

Strengthen the construction of the platform for scientific research

Ecosystem research station has been established in the subtropical evergreen broad-leaved forest of Wuyishan. It supplies a new technology platform and sets up a good step for enhancing the protection and management in the Nature Reserve. "Water Cycle Monitoring and Data Collection Focused on Information Technology in Evergreen Broad-leaved Forest of Wuyishan" is classified as a key project plan for social and scientific development in Fujian Province. It has completed fiber-optic data transmission's programs and equipment installation, and has begun the optical data transmission and collection work both wild water cycle plot and experimental plot. Moreover, we have actively participated in work of "Biodiversity Information Platform of

Wuyishan in Fujian, China", a project hosted by the provincial Science and Technology Department. Besides, we have made great efforts to modernize both equipment and information in research.

Strengthen the basic research

Through practice, we have realized the significance and role of science and technology in building and development of the Reserve, and the basic research has been encouraged. Then six works were published which contained Natural Resources, Forest Ecosystem, Chrysomelidae Insect, Pyralidae Insect, China Rare Wild Flower and Lapsang Souchong Black Tea. In addition, there also were more than 140 papers were published. The number of universities, research units and departments that we have cooperated with is more than 30 in total. "The Application of Geographic Information Systems (GIS) in Preventing Forest Fire" and many other projects have been successfully completed and applied. Currently, there are many ongoing research projects, such as "Resources of Wasp Predators in Wuyishan Nature Reserve ", " Resources Survey of Nectar and the Bees in Wuyishan Nature Reserve", "Protection Technology of Endangered Species Tsuga chinensis ", and so on.

High-yield bamboo model test of the region to promote the building of a well-off village

In 1985, in order to take the advantage of local bamboo resources and improve regional production and livelihood of the villagers, we set up a research of "Structure and Biomass of Naturally High-yield Bamboo Forest". High-yield bamboo model base which is thousands of acres has been established in Dazhulan. We took the management model by which bamboo reproduce in a more natural way, with no reclaim, no medication, grasses and shrubs clearing once every two years. Also, scientific harvesting protocols were developed. The yield of bamboo increased from 97 to 143 individuals per mu, and the average diameter increased by 30%. Bamboo and its deep processing have become the backbone of the local economy.

An industry of black tea to benefit the whole community

We excavated and disseminated the culture of Bohea. It had a glorious history, which swept the British Isles and was the drinks for British royal Queen. We founded the “Institute of Natural Lapsang Souchong black tea” and a research group for “the ecological environment and the history of Wuyi Lapsang Souchong black tea” was organized. After five years of efforts, the research group have published four research papers, and two monographs, including "The world’s black tea ancestor - Wuyi Lapsang Souchong Black Tea (Bohea)", which showed that Wuyishan Biosphere Reserve is not only the origin of Bohea, but also the ancestor of world’s black tea. This greatly enhanced the popularity of Bohea.

We should maintain and innovate traditional crafts, create brands and implement high-end marketing. The status and worth of Lapsang Souchong black tea increaced quickly with the rise of black tea hot. Its price is up to 500 RMB per kilogram in 2009, which is 100 times five years age. This greatly stimulated tea farmers. The tea production has been fully restored and the income of local residents is significantly improved. An industry of black tea benefits the whole community. Now, Tongmu village and Aotou village in the Reserve are richest in the Wuyishan city and Jianyang city respectively. Besides, Dapo also becomes a well-off village. Tea production has little impact on resource utilization and environmental protection, because tea production in the Reserve is only limited to the original tea land, while reclamation of new land is forbidden ,Therefore, it is less impactive to conservation compared with bamboo production.

To carry out cooperation of scientific research

The Administrative Bureau puts the Wuyishan Biosphere Reserve as a natural scientific research base of colleges, universities and research institutes. It enhances use discussion of research projects with Xiamen University, Chinese Academy of Sciences Microbes, Fujian Academy of Forestry, Nanjing Forestry University and so on. In addition, it enters into the agreement with more than 20 colleges and universities inside and outside the province, to become a base of their teaching practice. These actions build more platforms for scientific research of the Reserve, which make science and technology play a leading role better in the construction and development of the Reserve.

Strengthen management and services, improve the effectiveness of conservation and development to implement the GEF project, and enhance the management

The first administrative improvement of nature reserve that the Global Environment Found (GEF) carried out in China is the GEF project. Wuyishan Biosphere Reserve became one of the five nature reserves in the project. The Wuyishan Biosphere Reserve in Fujian province as the main body associated with Wuyishan Nature Reserve in Jiangxi province joined the project. Since the application launch in 1992, it took 9 years to put it into practice. We construct a biological corridor, which is used for the genetic communication among the three core areas of the protection zones in the two provinces. Not only more than 3000 hectares woodland in the test zone will be managed as a buffer, but also more than 600 hectares woodland outside the zone will be added, totally 11 units. The biological corridor become the first provincial protection joint in the project. The staff of the Reserve and the community residents have been well trained. Their capacity of management and protection has been greatly improved. And the management is going to be with international standards step by step. The construction of Wuyishan Nature Reserve in Jiangxi has been accelerated. It was selected to be a national nature reserve instead of provincial one, and the total area was enlarged from about 4000 hectares to 20000 hectares.

Fruitful results achieved by Wuyishan Biosphere Reserve

In the latest 30 years, we regarded protection as the root, residents as the base, and responded actively to the major contradictions between management of protection and development of community. Furthermore, we root and branch innovated in mechanisms and measures of protection joint, fully made use of the leading role of science and technology, initially achieved the win-win goals of development and conservation. Wuyishan Biosphere Reserve is considered as an important ecological barrier in northern of Fujian. Ecological impact of the Reserve not only provides a guarantee but also brings a valuable brand for the economic development of local community. It locates at a multi-prone area of over mesoscale natural disasters in China. It owns the lowest temperature, the most rainfall, the longest fog and the highest humidity in Fujian. In addition, the region is at an average elevation of 1200 meters. The mountains are very high and quite steep. The relative elevation is up to 1800 meters and average rainfall can reach 2500 mm annually. In 1998, the flood occurred throughout the country. According to the monitoring data of flood warning system of Minjiang River, the rainfall was recorded 4037 mm in Xianfengling of the Reserve, of which daily rainfall was also as high as 1636 mm for 13 consecutive days. If the centralized rainfall occurred in general areas, it would cause severe flooding and landslides, and its consequences would be incalculable. However, it didn’t bring much injury to residents in the area or cause the chain disasters outside the area though the disasters also happened in the Reserve, which focused on ruining roads, bridges and poles.

Wuyishan Biosphere Reserve is the important source and catchments of the mother river Minjiang River in Fujian. And it is the origin of Jiuqu Stream which is the essence of Wuyishan Scenic Area. Jiuqu Stream in the Reserve is about 25 km long and the basin area is about 130 square kilometers. In the past, due to lots of forest logging at the beginning of built-up areas, it caused critical situation that Jiuqu Stream is almost drought up in autumn and winter, even one raft is impassable. Now, all through the year, it can be achieved that double rafts can be put together except the flood season. Accordingly, Jiuqu Stream becomes the golden waterway of Wuyishan travel, ticket sales only through the drift in Jiuqu stream would amount to 0.1 billion RMB each year, and annual income by the driven tourism is up to 1 billion RMB or more.

Wuyishan Biosphere Reserve is fully affirmed for its hard work and outstanding achievements. In 2008, seven ministries and organizations, the State Environmental Protection Department, State Forestry Administration, Ministry of Agriculture, Ministry of Land and Resources, State Oceanic Administration, Ministry of Water Resources and Chinese Academy of Sciences, assessed the management of national nature reserves in provinces and districts of south China. Wuyishan Nature Reserve obtained a high degree of recognition and evaluation by the expert team, ranking the first place of provincial.

Since 1999, Wuyishan Biosphere Reserve has been commended as the "Advanced Group of National Nature Reserve" for many times by the State Environmental Protection Administration, the State Forestry Administration and other seven ministries. Moreover, it has been awarded as "Ten Protection Collective" and "Civilized Unit" by Fujian Provincial Government.

Nowdays, there are eight ecological landscapes that are impressiveness which people throughout the world admire the Bohea:

- The cloud around the Huanggangshan Peak,
- With bamboo grove,
- the mountainside looks like a green sea,
- Piedmont broadly covered with broadleaved tree,
- In the forest lived different mammals you can see,
- Red Danxia landscape contain the god soul and holly,
- Around the flower are beautiful butterfly and bee,
- The waterfall together with forest bring the atmosphere of free.

Problems and difficulties

Compensation of wildlife accidents: After three decades of effective protection and management, the number of wildlife increased subsequently in the nature reserve. Wild boar, macaques and other wildlife are almost no natural predators, increase their population sharply. All this resulted in great damage to the livelihood of the resident in the region. According to statistics, destruction on bamboo forests by monkeys caused loss of 1.5 billion RMB each year. The local villagers cannot obtain appropriate compensation after the wildlife hazard, which has become an urgent problem.

Actual control right of resident: After the reform of collective forest right system, the conflict between forest ownership and actual control will become increasingly intensified.

Fire jeopardy and life safety: The fire jeopardy and life safety increase along with farm production, tourism and exploration activities by travel fans.

"Isolated island" phenomenon and protection pressures: Frequent production activities in surrounding areas, border illegal logging and latent forest fire let this protected areas becoming an "isolated island". Therefore, we must enhance scientific and technological means by stepping up input in monitoring of forest fire prevention and the remote video resource monitoring system.

Source of timber for making black tea: In the history of Wuyi Area, the Bohea was made by pine timber. According to the existing nature protection legislation, logging is strictly prohibited, the villagers' living timber, tea-made timber, and other material could not properly resolved, it become new conflicts between conservation and benefit of the local residents.

The enforcement body not clarity: Wuyishan Biosphere Reserve is also National Nature Reserve, a part of heritage, among Wuyi City and other two counties, in charge by Forestry Department of Fujian Province. There is a variety of law enforcement and the enforcement body is lack of clarity. It is a challenge to manage the Reserve.

Conclusions

The Four Concepts we set up for exploring the protection and development have established the ideological foundation and the main body for win-win cooperation. The Ten Actions bring happy life and wealth. The joint protection style ensure the safety of biodiversity and the peace of community. Technological innovation improve residents' diathesis and community wealth. Strict management strengthen governance capability and the harmony of community. The practice of protection and development has achieved win-win results. We realized that the synchronization of protection and development is the most important topic to establish a stable and harmonious biosphere reserve and to become a sustainable development reserve. We should properly handle the relationship with the community as well as the neighboring localities and departments. Giving priority to promoting community sustainable development has always been an important basis for effective protection of biological diversity.

The results of the sustainable development in the Reserve promote the local ecological environment and local ecological civilization. The Wuyishan Biosphere Reserve provides an important foundation and green barriers for the Great Wuyi Tourism Strategy of the west coast of the Taiwan Straits. And the Reserve is known as "green pearl of the west coast of the Taiwan Straits" and "a model for ecological construction". The Wuyishan Bioshphere Reserve will consolidate the effectiveness of the protection and development according to the of Seville Strategy, the Madrid Plan of Action, Framework Convention on Climate Change, become a model sustainable development biosphere reserves, make our due contribution for the construction of global ecological civilization and humanity progress.

MAB Biosphere Reserve Network-a tool for large scale conservation of bio-cultural diversity in East Asia

Masahiko Ohsawa, Takeharu Shumiya, and Masaru Miyakawa
Nature Conservation Society of Japan (NACS-J)
1-16-10 Shinkawa, Chuo-ku, Tokyo 104-0033, Japan
e-mail: MLA40530@nifty.com

Introduction

Most of the protected areas including MAB-BR (Biosphere Reserve) are habitat-islands, isolated fragments scattered within the human-dominated landscape. This makes the reserves' ecosystem inevitably fragile when it is subjected to the changes in global climate or land-usage. The reserve and its network should be ecologically designed in order to ensure the survival of the targeted biota or ecosystems through such global changes, and at the same time to make it compatible with the livelihood requirement of the local populations.

One of the highly innovative aspects of the Seville strategy (1995) for the creation and management of the BR, is the recognition of the need to strengthen the links between biodiversity and cultural diversity. The essential conceptual framework of the BR places a particular importance in East Asia where the tradition to reconcile the human life with nature still persists at the local, regional, and country level. This concept has been revisited frequently as its importance in the modern society has been well recognized, for example, in an international workshop organized by UNESCO in Tokyo in 2007 under the title of "Links between Biological and Cultural Diversity" (UNESCO 2008), an international workshop on the "Links between Biological and Cultural Diversity" in UNESCO HQ Paris in 2007 (UNESCO 2008), an international symposium on "Preservation of Biocultural Diversity - a Global Issue" in Vienna in 2008 organized by BOKU University, Vienna (Sprechtna 2008), etc.

Biosphere reserves in the evergreen broad-leaved forests in East Asia

One of the ecosystems most widely distributed as the scattered isolated fragments, is the subtropical/warm-temperate evergreen broad-leaved forest. The evergreen forest ecosystem has been widely distributed in the past, including in Europe during the Tertiary period, however most of the areas became extinct during glacial periods. Today, the most well preserved ones can be found in the humid mountainous part of East Asia (cf. Wang 1961, Huebl 1988, Folch 2000).

Among over 550 UNESCO-MAB's biosphere reserves of the world, only twelve of them are in the subtropical/warm-temperate evergreen broad-leaved forest biome; seven are in China (Mount Dinghu, Wolong, Mount Fanjing, Mount Wuyi, Shennongjia, Jiuzhaigou valley, and Tianmushan), and three in Japan (Mount Hakusan, Mount Odaigahara and Mount Omine, and Yakushima Island). The other two are both at the south-west and south-east corners of European territory, preserved as refugia; one in La Palma in the Canary Islands, and another in the Caucasus (Folch 2000).

The BR network of the subtropical/warm-temperate evergreen broad-leaved forests in East Asia is typical in that it aims for the conservation of the endangered, relic ecosystem in the heavily utilized human-dominated biomes in the world. In East Asia, various traditional practices in agriculture or uses of natural resources are still prevailing, greatly utilizing its ecosystem such as water- and biogeochemical-cycling, and succession and regeneration of grasslands and forests. There are also various areas that are protected such as natural monuments, natural parks, wild life sanctuaries, and others including BRs. Religious beliefs function similarly in protecting biota in a certain area perceived by the local people as sacred, keeping the area free from human disturbance.

Thus one can conclude that the BR, in particular, is an effective tool to conserve both biodiversity and cultural diversity, through the traditional agricultural and agroforestry practices, and other sustainable systems for utilizing natural resources. These aspects serve the human dimension well by keeping the balance between conservation and development.

The pattern of East Asian forest ecosystem and its significance for climate change

The vegetation of humid monsoon Asia has unique features as it has retained a direct connection with the species-rich pool of tropical biota since the Tertiary periods (Ohsawa 1990, 1993), leading to the migration of many tropical biota into temperate latitudes and vice versa in East Asia. The rugged topography of high mountain-chains mainly in a north-south direction in Southeast and East Asia has also contributed to this phenomenon by serving as the migration route and as a result, various relic biota of the Tertiary period have managed to survive past geological climate changes.

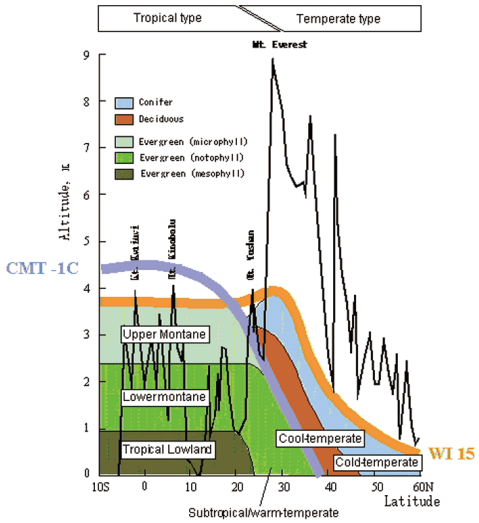

Fig. 1 Mountain vegetation template for humid monsoon Asia with mountain profiles in monsoon Asia (Ohsawa 1990, 2006). Effective temperature conditions for forest limit (WI=15 degree-months) and for cold-limit of evergreen broad-leaved forests (CMT=-1 ℃) are also indicated.

In East Asia, two peculiar climatic/physical features i.e., 1) year-round monsoonal humid forest climate from equatorial latitudes towards the northern latitudinal forest-limit, and 2) high mountain chains along the eastern margin of the Asian continent, give us the opportunity to study the gradational changes of forest zones in the mountains, from tropical to temperate latitudes. By using the latitude-altitude matrix as the framework for comparison, we are able to compare the forest zones of this area in relation to temperature changes along both latitude and altitude.

The mountain-vegetation template of the humid monsoon Asia has shown the decisive effect of temperatures and its latitudinal/altitudinal changes on the forest pattern of this area (Ohsawa 1990) (Fig. 1). By using the latitude-altitude matrix of temperatures, the effects of different temperatures such as in winter and summer, can be clearly seen as the major factor that delineates the forest distribution of the area. In the tropics, there are no seasonal temperature changes, thus the pattern of distribution and the structural changes of the forest

are determined by the sum of the temperatures or the heat energy during growing periods (Ohsawa 1993, 1995).

The annual temperature-range increases gradually as you move from the equatorial tropical climate toward the seasonal temperate climate. This is mainly caused by the lower winter temperature in higher latitudes, and determines the distribution pattern of vegetation, particularly of tropical types of evergreen broad-leaved forests. Naturally, this decisive role of the winter temperature will be significantly affected by global warming.

In East Asian mountains, there are many Tertiary relic conifers (Hotta's (1974) "temperate conifer" such as Cryptomeria, Chamaecyparis, Pseudotsuga, and Sciadopitys) and other primitive-vesselless angiosperms, such as Trochodendron, Euptelea, Davidia (China) and Tetracentron (China to Himalaya) (Tang and Ohsawa 2002), in the upper boundary of the evergreen broad-leaved forest zone (Fig. 2). The possible rise in winter temperature may seriously affect the upper/northern boundary of the evergreen broad-leaved forests (-1 degree C of CMT) and cause its expansion into deciduous/coniferous forest zones in further northerly latitudes/higher altitudes. As a result, regeneration of these Tertiary relic elements (mostly intolerant to mid-tolerant conifer/deciduous tree species) in East Asian forests will be suppressed by the dense canopy of the evergreen broad-leaved forests (Ohsawa 2006).

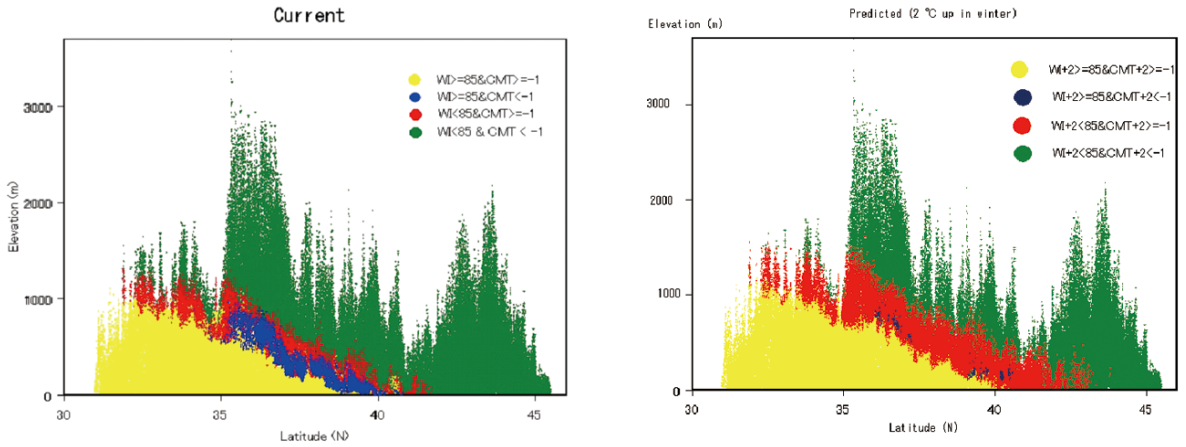

Fig. 2 Distribution of potential habitat for the forest zones in Japanese archipelago and their shift by the winter temperature rise of 2 ℃(CMT) (Ohsawa and Matsui orig. cf. Ohsawa 2006).

The status of Japanese BR for conservation of sub-global pattern of the ecosystems

In general, global warming seriously affects the fragmented/isolated protected areas (Peters 1991), as well as the arrangement of the altitudinal zones (Halpin 1994). According to our trial calculation, even a modest scenario of a 2 degree C rise in winter-temperature in Japanese mountains will significantly affect the potential habitat for the temperate relic-conifer and primitive angiosperm as shown in Fig. 2 (blue zones). In the isolated/fragmented protected areas, the climate changes inevitably affect the reserve habitat and in turn the biota, which may become a hostile environment for the targeted species to survive within the limited range of the protected area. In addition, most of the reserves in East Asia are located in relatively restricted mountain habitats, making it even more difficult for the targeted ecosystem or biota to migrate and expand their new

territory, crossing beyond the hostile lowland habitat (Fig. 3) to nearby mountain habitat. This is particularly serious for the rare/endangered species in East Asia (Fig. 3).

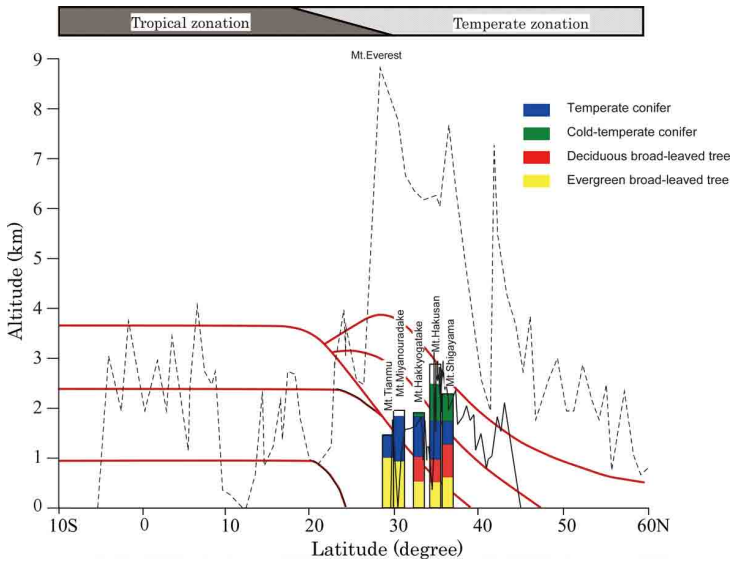

Fig. 3 Vegetation zonation in four BRs of Japan on the mountain vegetation-template for humid monsoon Asia (Ohsawa 1990, 2006). Mount Tianmu-shan, China where Cryptomeria also distributed (Da et al. 2009) is also shown for the comparison.

One of the most popular plantation trees in Japan, Cryptomeria japonica (endemic), has a very limited natural distribution in the Japanese archipelago. Yakushima Island is among the most well known habitats for this species, which is not only designated as one of the three World Heritage sites, but also one of the four BRs of Japan. A connection between those reserves or any other types of reserves is required, in order to facilitate their functions to maintain and support the regeneration of the species population. These protected reserves are isolated from each other, however, they should be connected either through corridors or by establishing new reserves. Even the small, isolated fragmented area can harbor at least some biota and ecosystems, and this helps ensure that a viable population in such fragmented habitat will be preserved. Japan is composed of a long stretch of mountainous archipelago from north to south for more than 20 degrees latitudinal range, and thus harbors a wide variety of biota along both the temperature gradients and the latitudinal/altitudinal gradients (cf. Fig. 1).

All the BRs and their vegetation types are located in the matrix of latitude and altitude, and the vegetation zone arrangements in the humid Asian monsoon areas are categorized based on the temperature conditions (precipitation is not a limiting factor for the distribution of vegetation in humid part of East Asia). All four BRs in Japan are located in the mountain vegetation template (Fig. 3).

Biosphere Reserve as the sacred sites for the village life

With the long tradition of forest-use, most of the forests near the villages are semi-natural ones modified through people's daily use, providing firewood, charcoal, agricultural tools, construction materials, and various other commodities. Although these forests serve an important role in preserving a particularly intolerant (grassland) species unique to the relatively open habitats, most of the rare, endemic, and endangered species which requires stricter protection are localized in the remote mountains called "Okuyama" (inner

mountain). The local villagers consider such "Okuyama" as the place where their ancestors dwell as the guardians/deity who protect them from disasters, provide them the rich agricultural harvests, and promise a prosperous life. Because of this, the forests surrounding those Japanese villages are arranged in a kind of a zoning system which fans out from the village centre, to the semi-natural forests for daily use, and then to the sacred protected forests. The reverse pattern of this zoning system can be seen from the core natural/pristine forests, the surrounding semi-natural forests, and then to the human-habituated villages, similar to BR zoning system. In Yakushima Island BR, we can see the pattern starting from "Okuyama" at the centre of the island (high mountain peaks), surrounding lower mountains "Maeyama" (frontal mountains), and to "Sato" (villages with human habitation) along the coast (Fig. 4). This kind of the forest protection linked with the human usage reflects the Japanese traditional way of natural resources managements. A long tradition of utilizing the renewable natural resources of the forests has become the reason to protect the mountain and its forest in the rural area. As the objects of sacred worship by the villagers, these forests have remained untouched and preserved in a pristine state for a very long time, and all four BR sites in Japan were established on such sites.

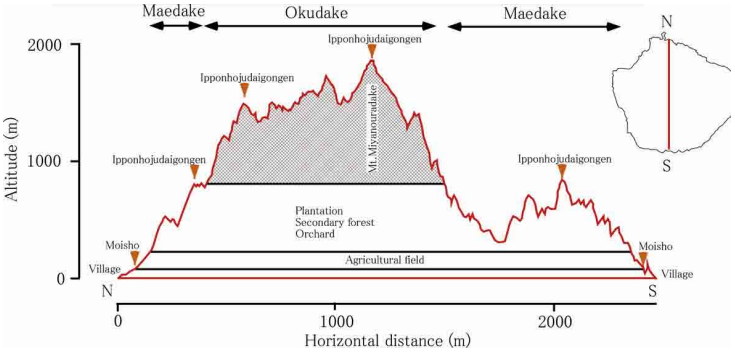

Fig. 4 Yakushima islander's spatial perception on mountainous part of the island. Okudake: central mountainous part of the islands where islanders worship mountain gods (Ippon Hoju Daigongen), until recent time people never enter for harvesting timber and other forest products, Maedake: Meeting place of islanders and gods, Moisho: boundary between sacred mountainous part and village life.

What sets the UNESCO BR system apart from the other existing reserve systems, is that they consist of 3 distinct zones called the zoning system – namely, the core zone, the buffer zone, and the transition zone. It's considered beneficial compared to the isolated reserve zone standing by itself with no surrounding support zones.

Interestingly, this very same zoning system could be found in some Asian traditional villages long before the UNESCO started advocating this organized zoning system concept. In those villages, this zoning system has developed unintentionally, but evolved naturally where there is a village, then a surrounding semi-natural ecosystem, and then further away exists the non-disturbed sacred forest. This concept of the sacred forest played an extremely important role functioning as a successful reserve and enhancing wildlife preservation. The examples of these sacred sites are; Dang-Namu in Korea (Saiki 1988), Ronxian in Yunnan, China, Obo in Mongolia, Feng-shui forest in Hongkong (Yip 2004), Shrine and Temple forests in Japan (Iwatsuki 2006), etc. We may be able to draw some important lessons from this long-standing traditional conceptual system and the more recently developed UNESCO BR concept when we consider how to successfully manage nature conservation closely linked to human activities.

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Implementation of MAB's Seville Strategy and Madrid Action Plan
A brief report of Komodo Biosphere Reserve, Indonesia

Tamen SITORUS
Director, Komodo National Park, Indonesia

Abstract

Protected area is of the earth's most important places that help to sustain life and safeguard biodiversity for humans. It has long been one of the main strategies for safeguarding the world's biodiversity. It can offer a range of benefits including protecting biodiversity, enhancing fisheries, boosting tourism, providing economic opportunities and reducing conflict. But pressures on the environment caused by economic development and other human activities make it difficult to protect natural areas that are large enough to accommodate entire ecosystems. Indigenous people who over centuries have managed the natural resources they held in common property and interaction between people and nature has been intimate and harmonious. However, increasing competition for the use of natural resources has increased resulted from population growth and the pursuit of rising material standards of living. Economic tensions tend to raise conflicts. This condition has caused pressures on natural resources. Destructive practices for within protected areas have severely threatened natural resources. The traditional view of protected areas is isolated repositories for natural heritage. Hence indigenous and local communities are ignored. The 5th IUCN World Parks Congress' theme "Benefit beyond Boundaries" has recognized the importance of protected areas for communities and the economic activities in and around them (Lockwood 2006). This paper outlined the prove of Biosphere Reserve value beyond protected areas becoming a tools of linkage between community livelihood and ecotourism activities as an alternative practical solution in protecting natural resources in order to achieve sustainable development as the overall goal for biosphere reserve.

Introduction

Komodo National Park (KNP) is located between the islands of Sumbawa and Flores at the border of the Nusa Tenggara Timur and Nusa Tenggara Barat provinces. KNP was established in 1980 and subsequently designated a Man and Biosphere Reserve by UNESCO in 1986 and a World Heritage Site in 1991. KNP was established to conserve the unique Komodo dragon (Varanus komodensis) and its habitat.

KNP includes three major islands: Komodo, Rinca, and Padar, and numerous small islands together totaling of 1,817 kilometer square. This area of Indonesia is part of the Wallacea Region. KNP lies within an area known to scientists and conservationists as the Coral Triangle. This area, where the great Pacific and Indian Oceans converge, is the only equatorial region in the world where there is an exchange of flora and fauna between oceans. It is the heart of the world's marine biodiversity, containing the richest coral diversity in the world and is home to many highly diverse and threatened marine habitats including fringing and patch coral reefs, mangrove forests, sea grass beds, sea mounts semi-enclosed bays and deep-water habitats.

Because of its strategic location, KNP is considered as one of the world's richest marine environments. It encompasses 510 square miles of exceptionally diverse marine habitats, including coral reefs, mangroves, seagrass bed, seamounts, and semi-enclosed bays. These habitats harbor more than 1000 species of fish, some 385 species of reef-building coral, and 70 species of sponges, and endangered marine species such as Dugong (Dugong dugon), dolphins (10 species), whales (6 species)—including the blue whale (Balaenoptera musculus) and sperm whale (Physeter macrocephalus), marine turtles such as hawksbill turtle (Eretmochlys imbricate) and green turtle (Chelonia mydas).

There are approximately 4000 inhabitants living within the Park, spread out over 4 setttlements (Komodo, Papagaran, Rinca and Kerora). An estimated 15,000 people live in fishing villages directly surrounding the Park. Park inhabitants mainly derive their income from a pelagic lift net (bagan) fishery, which is targeting squid and small schooling pelagic fish. This fishing method is not affecting the sedentary marine ecosystem in the Park and is therefore not in conflict with the Park's objectives. Additional income and food is derived from hook and line fishing, trap fishing, reef gleaning, and other fishing methods. Non-inhabitant fishermen also use pelagic lift nets and a variety of other methods such as compressor fishing, hook and line fishing, and gillnetting in Park waters.

Traditional community in the Park has been subject to outside influences. Mobility, mass communications and immigration have brought change. The majority of fishermen in and surrounding the Park are Moslems, with a strong informal institution of Koran recitation. Hajis have a strong influence on community dynamics. Most communities can speak Bahasa Indonesia, with the Bajo and Manggarai languages being used mainly for daily communication (Singleton 2002).

Komodo dragon

Management challenges

Although lift-net is the dominant gear-type in KNP, several destructive fishing practices (DPFs) such as dynamite, cyanide, and compressor fishing (mostly done by non-Park inhabitants), reef gleaning and plain over-fishing, severely threaten Park's marine resources. Terrestrial threats include the increasing pressure on forest cover for fuel wood and water resources as the local human population has increased 800% over the past 60 years. In addition, the Timor deer population, the preferred prey source for the endangered Komodo dragon, is still being poached. Pollution inputs, ranging from raw sewage to chemicals, are increasing and may pose a major threat in the future.

The pressure is leading to degradation of the terrestrial resource base. The collection of firewood from the mangroves and surrounding forests degrades them, and leads to the loss of breeding grounds and shelter for marine life and terrestrial species, the loss of windbreaks, increased erosion/siltation, and the loss of food sources for some species. Increased extraction/diversion of water leads to reduced water available for dependent fauna, changes in the water table, and will affect plant distribution patterns (Pet 1999).

Explanation of the natural ecosystem in the KNP waters has increased and become more intensive over the past few decades. A cash economy has developed and the standard of living in the area has increased since 1980. This observation is based on the increasing number of people who have made the pilgrim's journey to Mecca, and the growing number of boat owners, buildings, and televisions in the area. The use of destructive

fishing practices, such as bombs and poisons, has increased with the increasing need for cash, and has had a negative impact on the Park's quality as a source of replenishment. Law enforcement is not the answer to minimize these conflict.

Furthermore, as insular Biosphere Reserve, climate change will be one of the most crucial problem faced by KNP in near future. Climate change may effect ecosystems, loss of flora and fauna, sea level rise, temperatures rise, increased costal erosion, damaged breeding areas, coral bleaching, rainfall and weather pattern, large change in currents and wind and other types of impacts. The impact of recent climate change (July 2007) has shown the evidences of damaging tourism infrastructures (costal wall, jetty, visitor information, etc) as well as coral ecosystem.

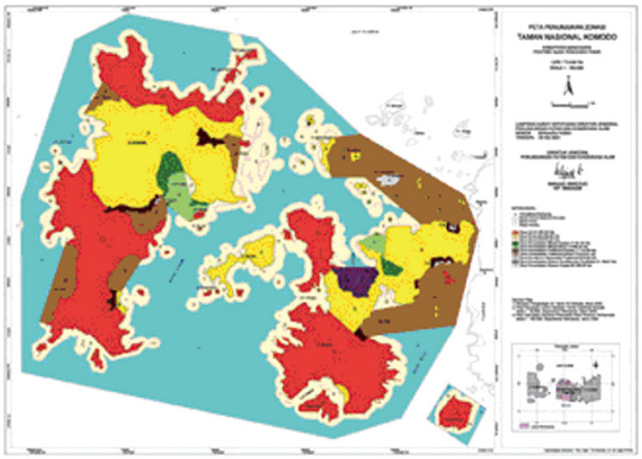
Management Strategies and actions

Zoning System- Linking function to space

Area management within the Park is based on zoning. The zoning system for KNP includes and covers both terrestrial and marine areas. A single zoning system has been designed for the entire Park with a total of 7 types of zones which includes Core Zones, Wilderness Zone with Limited Tourism, Tourism Use Zone, Traditional Use Zone, Pelagic Use Zone, Special Research and Training Zone, and Traditional Settlement Zone. Two of these zones, for example, are Settlement Zone and Traditional Use Zone. In both zones, communities living inside the Park have a chance and exclusive rights to do their daily activities, including traditional extractive activities, as long as they are in sustainable manner (Law No. 5 of 1990 concerning Conservation Natural Resources and their Ecosystem).

However, the existing zoning need to review to meet Seville Strategy 1995 and MAP requirements and recommendations. This should contain three one more or more core areas, a clearly identified buffer zone and flexible transition area to accommodate their multiple functions.

Partnership:



Zoning map of KNP

In 2005 The Park collaborated with a Joint Venture company PT. Putri Naga Komodo to set up tourism concession from which the profit will be channeled back for park management to sustain park operation. This sustainable financing scheme is implemented through Komodo Collaborative Management Initiative (KCMI).

The KCMI is intended to address the dynamic challenges and opportunities facing KNP in a comprehensive program of investments, policy reforms, management interventions, community development projects, and institutional strengthening. KCMI will enhance stakeholder involvement in the management of KNP, and involve all important stakeholder groups, including the Park authority, local government, the Joint Venture PT. Putri Naga Komodo, with additional inputs from local communities (Mous 2004).

Science and Capacity Building

Local community involvement was formed through the establishment of Forum for Community Communication (FCC). FCC was set up to address complaints, concerns, and input from the community. Through this way, community also takes an important part in management of the National Park. Some state-run protected areas in some parts of the world suffer from ineffective management, inadequate allocation of resources, lack of local support, and incursion from local communities (Lockwood 2006).

The Park includes socio-economic development programs as a means to provide incentive to local communities to reach the overall goal of nature conservation, both by creating alternative (non-destructive) sources of income as well as aiming for private sector oriented and self-regulating measures for protection.

The Park together with collaborative management has initiated a number of community alternative livelihoods to obtain tangible benefits from conservation of natural resources through Incentives for Sustainable Livelihoods program. The objective of the Incentives for Sustainable Livelihood is to provide positive incentives to resource users in and around the park to switch from destructive practices such as cyanide and blast fishing, to biodiversity-sensitive livelihoods (KCMI Project Document 2004).

To achieve this goal, the component will involve scoping of alternative livelihood schemes based on the sustainable use of marine resources, providing community development grants, and stimulating the local economy through the development of sustainable micro-enterprises.

A series of community development activities are conducted according to the three elements. Some of the past activities that have been done are seaweed farming, sewing and weaving, and fish culture project (Mous 2004). A community-based Financial Management Unit (FMUs) was established as one of the key programs for community development with the purpose of managing micro-credit programs through a Sustainable Enterprise Fund (SEF) set up to fund viable and sustainable options for micro-enterprise development in the approved alternative livelihood options. This fund will be administered locally by a committee of community leaders, which will review funding proposals from villages within the park and buffer zone. Enterprises will be selected based on their ability to generate economic returns and contribute to the conservation of natural resources.

Furthermore, villagers from Komodo have been involved in carving of Komodo dragons sold as souvenirs for tourists. The Park made a space available where locals can sell souvenirs in one of concession sites Loh Liang, Komodo Island. The Park provided series of training to improve their skill and helped in providing carving tools. The sustainable financing scheme in Komodo National Park has set up a new fee system namely Tourism Fee for Conservation. Visitors coming to the Park pay a certain amount of money. The money will be channeled back to support the park management to improve community development in the Park. Women groups in the villages are trained to produce handicraft (bracelet from coconut husk as a token of appreciation for visitors paying for the Tourism Fee for Conservation). Young people from the villages have started to seek profession as tourist guides by joining Naturalist Guide training conducted by the Park authority to open more job opportunities that link with conservation in the Park. As a result, local community will eventually be the best guardian to the park since they get benefit from the Park.

Community in the village

Ecosystem Services: The Role of Ecotourism

Ecotourism development has become a prominent approach to address socioeconomic concerns in a conservation issues. Ecotourism is considered to be a form of resource use that contributes both to conservation and rural development by generating revenue for park management by providing local communities with sustainable livelihood alternatives and economic benefits (Borchers 2007).

Apart from community development program, ecotourism can also generates additional income for local community. KNP is not only well known among international tourists, but also among environmental exerts and world's tourism industry. Because of its unique biodiversity and scenic beauty, in spite of its remoteness and underdeveloped facilities, KNP today is one of the most visited nature reserves in Indonesia. There are more than 27,000 of international tourists visit KNP yearly. In short, the presence of Komodo dragon has invited more foreigners (tourists, researchers, documentation film makers) to come and spend dollars in the region to enjoy the uniqueness of the nature (savannah, coral reef, fish and other sea creatures) in the Park. Tourism to the Park has the potential to contribute significantly to the surrounding local economy, through employment and revenue generation, and to stimulate local development (Walpole 2000).

Dragon carver from Komodo Village

Climate Change: Mitigation and Adaptation

As mentioned before, Komodo National Park (KNP) is located between the islands of Sumbawa and Flores at the border of the Nusa Tenggara Timur and Nusa Tenggara Barat provinces. As insular Biosphere Reserve, climate change will be one of the most crucial problem faced by KNP in near future. Climate change may affect ecosystems, loss of flora and fauna, sea level rise, temperatures rise, increased coastal erosion, damaged breeding areas, coral bleaching, rainfall and weather pattern, large change in currents and wind and other types of impacts. The impact of recent climate change (July 2007) has shown the evidences of damaging tourism infrastructures (costal wall, jetty, visitor information, etc) as well as coral ecosystem.

Therefore, adaptation programs have to develop as a respond to current climate. The development based on current individual, community and institutional activities both in local and national level. Incorporated of BR s into National Policies and develop Strategies and Action Plan towards sustainable development. In local level, some action has been taken including: early warning system, public awareness/ community empowerment, forest/coral rehabilitation, forest fire management, staff's capacity building, mangrove and peat land conservation, research and development and law enforcement and other kind of activities.

Conclusion

The most effective way to protecting natural resources in protected areas is community involvement. One way of gaining support from community is ensuring that the local people benefit directly from conservation, and other activities associated with the protected area. Community is an important stakeholder with whom Park management must seek to cooperate. More of the benefits of conservation need to be delivered to local people by enabling them to benefit from the protection of the Park.

Local communities in KNP are able to gain economically from the protected area with which they live through alternative livelihoods and ecotourism. They also can offer means by which people's awareness of the importance of conservation can be raised. The essence of Komodo Biosphere as sustainable development "laboratories" has seen as the effort to meet the need of protected areas, economic and social well-being.

Climate change will be one of the most crucial problems faced by KNP in near future. Therefore, adaptation programs have to develop as a respond to current climate. The development based on current individual, community and institutional activities both in local and national level. The Seville Strategy and MAP will essential to rapidly seek and test solutions to mitigate protected areas challenges.

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Nature Resource and Human Activity of Shinan Dadohae Biosphere Reserve, Republic of Korea

Sun-Kee HONG, Jae-Eun KIM, Kyoung-Wan KIM, Heon-Jong LEE, Kyoung-Ah LEE, Kyong-O MOON
Institute of Island Culture, Mokpo National University,
Korea

Introduction

Shinan Dadohae Biosphere Reserve (SDBR) primarily consists of 1,000 islands bordering the southwest coast of Korea in East Asia. Dadohae National Park located in Shinan County includes most part of SDBR. SDBR will contribute to the conservation of natural environment in this marine area and to the sustainable development of human life. SDBR, 75,749ha in total, shows ecological, topological and cultural diversity from marine space to the island forest ecosystem. Surrounding the islands of SDBR, there are tidal flats, complicated tidal waterways with a significant difference between the high and low tide, which contribute to unique geographical and biological diversities. In addition, based on these geographical and biological diversities, people of SDBR have established a particular island culture adapting to the diverse ecosystems of ocean, tidal-flat, land, and forest. In sum, SDBR encompasses unique ecological entities sustaining precious continuum of ocean, huge tidal-flats, thousand of islands and the forest in them. It can also be explained as quite valuable cultural system with human subsistence adapting to the continuum of ocean and tidal-flat fauna and flora, adapting to the temperate island forests.

Zoning of BR Area

The core area includes three islands designated as Dadohae National Park and four natural monuments. This area is a mixed ecosystem with a terrestrial ecosystem, a maritime ecosystem, and a tidal-flat ecosystem connected. There are various animals and plants that have adapted to the various topographical regions, from the abyssal zone to the inter-tidal area and the coastal-terrestrial ecosystem that includes fields, forests, and mountains that embody species diversity. Dozens of warm-temperate evergreen broad-leaved trees, conifers and rare plants designated as natural monuments grow naturally in geographical isolation in the terrestrial regions of the core area. The region is an oceanic climate, thus the warm and moist weather support a temperate broad-leaved forest ecosystem and an evergreen broad-leaved forest ecosystem that exist within the region. For this reason, this area is a very important eco-region academically and plays a significant role in the valuable coast and island ecological axis of the Korean National Ecological Network.

In the tidal flat of SDBR, various marine organisms can be found such as various benthic macroinvertebrate communities and macrophyte. Highly diverse species of salt marsh and sand dune plants, tidal flat animals, and sand dune insects contribute to an abundant food chain, and increased stability soundness of an inter-tidal ecosystem. The tidal flat supports 13 kinds of birds identified as natural treasures including the Black-faced Spoonbill, Chinese Egret, and Oyster Catcher. In addition, 337 species of rare migratory birds as well as endangered birds including the Golden Eagle, Osprey and Oriental Honey Buzzard are live in or pass through this tidal flat.

The landscape of this area exists as an ecological ecotone that gradually connects sea, tidal flat, coastal beach, sand dune and vegetation in an environmental gradient. The various organisms of the area illustrate the results of ecological adaptation to a multi-ecosystem spectrum and its continuity, which lends higher conservation value to the marine and landscape diversity.

To create sustainable development zone 48,668 ha will be designated depending on the landscape and

biological diversity. Within the zone, economic development can be realized through creating cultural and economic system that will be reconciled with the continuum of various marine and island ecosystem. Here, from the past, adaptive use of ocean, tidal-flat and island ecosystem with simple, but environmentally sound technologies has been inherited up to now. The tradition can be revitalized to create sustainable new technologies and social organizations, the social demand of which has been already raised in the local societies, administration staffs and academics. SDBR would also foster the development of local industry of natural products and ecotourism that would satisfy the current aesthetic sensibilities of modern nature enthusiasts.

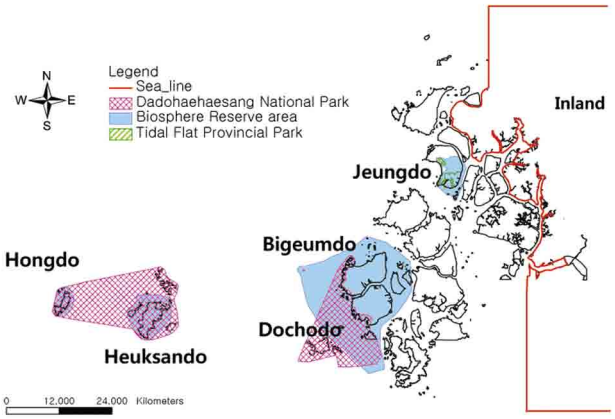

Fig. 1. Shinan Dadohae Biosphere Reserve Area.

Ecological and socio-economic characteristics in SDBR

Tidal flat nutrient cycling: The fishermen in this area have their own sense of values to estimate the quality of the fish according to the nutrients and strong taste from the tidal flat. The taste of the fish, shellfish and seaweed that inhabit the tidal flats, sea waters or rock crevices is affected by the tidal flat. For this reason, the harvest of this area is different from that of other areas. Salt is another gift from the tidal flats. Salt made by the sun or man-made fire rich in minerals from the tidal flats was a symbol of wealth in the past. Even today, the salt of this region is enjoyed and nationally recognized for its quality and natural benefits. Considering that, this recognition has gradually begun to reach foreign countries, making the connection between the tidal flats and salt through local industry would be a critical way to maximize the value of natural products and revitalize the local economy. In addition, the local food culture of this region has traditionally used salt to ferment fish, which now has become a national tradition. In light of this specific food culture, the fish and the salt become related industries developed as the principle axis of the local economy.

Local environmental and economic values and opportunity for sustainable development: The harvesting of seeweeds in the tidal flats and the shores has been traditionally controlled by village organization named Joobi. The main function of Joobi is to guarantee equal opportunities in access to resources and to enhance co-management, which result in preventing over-harvest. Currently, modern village fishing cooperatives (‘Ochongye’) have similar responsibilities and in some places, the activities of cooperative are operating on the principle of traditional Joobi. But as time goes by more and more the function of self-regulation or conservation of these cooperatives become weakened, distorted or disappearing. Therefore, SDBR is quite meaningful to inherit traditional conservation functions and vitalize modern organizational activities, their autonomous regulations as well as villagers’ sustainable economic lives. SDBR would be to create effective solutions to stabilize people’s local income securing the replenishment of resources.

Eco-tourism combined with food culture as well as with landscape is furnished by so distinctive and prospective conditions. Shinan Dadohae islands are filled with unique one thousand islands surrounded by tidal-flats, oceans with intricate waterways and fauna habitats, precious temperate evergreen forests, indigenous sea shore and inland plant vegetation, all of which contribute plentiful nutrition to these shallow ocean grounds.

SDBR area is famous for local fish stocks for fermented food resources and cuisine. Raw or semi-dried fish cuisine has long tradition too. Shinan Dadohae islands are quite unique in these respects among Jeollanamdo province that is recognized as the best place of food culture and cruise. Appling these traditions, combined with the SDBR's target of sustainable use, could result in 'slow food and slow life-ways' which is already in practice in a Shinan island. SDBR has the potential for further expansion to construct a nation-wide slow food system.

Agricultural products, medicinal plants, flowers and forest products can be used as special environmental products. Spinach thrives with the ample sunshine and soil condition of the islands. Root, bulb, and stem plants grow up isolated from any viruses from mainland. In addition, the bark of evergreen broad-leaved trees and medicinal plants can develop in these areas. These plants are well adapted to the regional environment. It is required for them to be reorganized in the system for environmental friendly produce and gathering. Finally, the value of local tourist attractions and local commodities would be increased by the direct connection with slow food or the symbolic association of body-region-food and body-region-medicinal plants.

Up to now, the modern technical information systems operated by specialist institutions or executive agencies, governmental or managed by research organizations, are quite effective and sincere to foster sustainable fishery and other local production. Local leaders also have an awareness and considerable experiences concerning resource issues. What is required now is the suitable integrative system to vitalize these organizational 'social capital' and cultural experiences, to regulate ego-centered economic activities that result in environmental degradation and to enhance people's economy in common cooperative base. In addition, future advanced step would be to develop existing fishery organizations into special ones in order to utilize Korean powerful producer-consumer liaisons. In Korea, urban consumer and rural producer liaisons are widely distributed. They are based on intimate partnerships or co-ops. Cultural sentiments of Korean human relationships and credibility operate here. Traditional or modern cultural activities, autonomous decision making on social organizing and management of credibility are nicely working. From SDBR to outside partnerships, open system of economic, social and cultural liaisons can be established quite well.

We are now designing this internal SDBR and outer open system with Shinan County, local people, nearby university and NGOs. This will be a powerful cultural path of SDBR to realize its ideals of conservation and development. With these possibilities in mind, with SDBR prospective, we are now planning the enhanced programs for conservation and sustainable development as following. First, enhancement of the interdependence between nature and human beings is envisioned. To do this, socially cooperative communication system will be designed. Second, the enhancement of natural value would integrate the elaborate ecosystems from the ocean to the forest, that is, the spectrum of landscape diversity. The natural value will be empowered by indigenous knowledge, cultural behavior and customs of local people. Third, the enhancement of ecotourism and cultural tourism would integrate synchronic diverse ecosystems and cultural areas, diachronic experiences of ocean and island lives. Also Shinan islands and ocean have the worldly remarkable relics of shipwreck in 14th century. This accident reveals historical routes among Korea, China and Japan. Finally, enhancement of local revenue would integrate the ecological and cultural path of production, tourism and property of intelligence based on local knowledge and sensibility, all of which would be impossible to be operated without local people's experience and labor.

SDBR is so important and meaningful to protect the ecosystem from the invasion of endangering tourist facilities that do not match local environment and culture, that extract local resources and degraded ecosystem. The SDBR would also create deeply ecological and cultural tourism and this will be the first model of authentic marine eco-tourism in Korea. This pattern of developmental strategy will match with growing needs of contemporary Korean citizens for nature, culture and identity, generating reciprocal revenues,

Development and utilization of alternative energy: Solar energy, wind energy, tidal energy, and biogas are very important energy resources in the face of climate change. Not only has alternative energy been touted as a solution to environmental problems, in light of rising oil prices, alternative energy also has the potential to provide economic relief to consumers. This would lead to increasing economic value of these alternative energy forms. Because it has been difficult to supply electricity to the isolated islands in the SDBR, there is a need for the islands to find a way to supply themselves with electricity. Because of this, 'Jeungdo' has already introduced a solar power generator that takes advantage of the island's abundant sunshine. The Shinan Dadohae Biosphere Reserve would be an opportunity to expand upon the islands' existing alternative energy sources.

The terrestrial area of SDBR only consists of islands. The main industry is agriculture and fisheries, and the main natural resources are the ecology, the landscape, and the agricultural and marine products. The sustainable development in SDBR could be based on the self-regulation of the People Community (fishing village cooperatives and common fishing grounds) formed by the local residents' spontaneous participation. Sustainable development could be achieved by the promotion of hand fishing (traditional way of picking and capture fishing) in the buffer zone; and farming fishery, salt production, agriculture, and tourism in the transition area.

The designation of UNESCO Biosphere Reserve is to provide opportunities that utilize regional traditions, and at the same time, can change traditions into a system of ecological resource management and human economic development to be able to correspond to future changes. The significance of this is to utilize the cultural landscape system that has been adapted to starting in the past and to figure it out to the cultural ecology of modern society to be more complicated. Simultaneously, this is to form the appropriate technology and the appropriate socio-culture no to break the ecological capacity and the negative feedback. It is possible to establish a long-term future plan for a sustainable ecology, culture, and economy at the Dadohae region. Especially, the tidal flat in the transition area has the function to conserve the natural resources and purify pollution created by human. Islands and the sea surround most of the tidal flat. Considering the kinds of industries, there is no possibility to damage it. In case of a saltpan, it includes the restoration power of the tidal flat. The saltpan permeates into the tidal flat by the nutrition of natural ecosystem, and becomes a nutrition supplier for the shallow-sea fishes. These tidal flats and saltpans are synonymous with organism diversity, where the ecological corridor connects the terrestrial area with the marine area. People make a living with gathering from marine products. The tidal flat itself is a remarkably economically efficient, so there is no danger to additional environmental disruption. Finally, it makes it possible for a sustainable economy.

SDBR is an 'Eco-region' where a broad-leaved forest ecosystem and evergreen forest ecosystem coexist in a warm and humid oceanic climate zone. Dadohae National Park is included in the important coastal axis of national ecological networks in Korea. The tidal flats and salt flats in the buffer zone and transition area are an historic space where the activities and identity of local people were passed down through the generations as they learned to adapt to the natural environment and developed their own indigenous knowledge. Therefore, the "multi-layered beauty" of the natural environment bears the historical traits of human adaptation to the environment along with its diverse biological resources. It should be regarded as an important cultural-ecological resource for promoting local sustainability.

The flora and fauna, culture and ecology of islands and tidal flats are not only important in terms of attracting visitors but are also useful academic resources. The distribution of natural resources from the terrestrial ecosystem to the sea via the tidal flat is valuable for eco-tourism and the local ecological economy. Dadohae National Park contains many sandy beaches and tidal flats, and the vegetation and salt marsh plants provide an important resource and habitat for migratory birds.

The fishing industry in Korea has been developed to satisfy the necessary level of environmental and ecological protection for specific local ecosystems. Designating Dadohae National Park as a UNESCO Biosphere Reserve will establish its further potential for fostering economic and human development and creating an ecologically sustainable ecosystem. In the long term, SDBR will fulfill an outstanding historical and cultural role as a global model for conservation and development in order to promote the concept of a sustainable ecosystem, culture, and economy. We have prepared a detailed and practical plan for accomplishing this goal.

Management Plan – Ecosystem approach

Culture support the motivation for native conservation and development: Human beings are part of the natural ecosystem, having long adapted to the natural environment in order to produce tools and food. This is the definition of culture. SDBR contains many ecological-cultural elements that demonstrate the linkage between people and nature, and they show us the possibilities for a cultural plan that embodies the future of environmental conservation and sustainable development. In SDBR, the sea has served as a geographically significant shipping route and maritime cultural corridor linking the continent and islands of East Asia since pre-historic times. Beyond East Asia, the cultural routes for export and cooperation expanded from the Korean peninsula to the Indo-China Sea. Long-term historical accumulations of cultural interchange are part of the valuable 'identity' and 'motivation' for developing marine culture in Korea.

Development and specification of fishery and cultivation based on local community system: People adapt to their local environments based on nature-based indigenous knowledge and empirical knowledge gained over time. "Pasi" is a traditional fish market that opens when there are big catches of fish. However, due to the modernization of the fishing industry, the culture and tradition of "Pasi" has disappeared. The collapse of traditional culture is significantly related to maritime environmental conditions. Over-fishing and oceanic pollution are major causes of the degradation of the fishing industry and the quality of the marine ecosystem.

Despite this exhaustion of marine resources and degradation of the ecosystem, the people's power and ability to sustain the balance of marine ecosystem persisted. The 'fishing village cooperatives' and 'village common fishery ground' are a couple of the social devices created to sustain the ecosystem's balance according to the traditional rule of self-regulation in the community village. These traditional methods for preserving the tidal flats were then transmitted to the next generation. Though tidal flats are state land, 'fishing village cooperatives' regulate the gathering time, place and productivity. The range of the harvesting area and productivity of the 'village common fishery ground' is decided from village unit to family by geomorphologic boundaries. Such 'fishing village cooperatives' manage the 'village common fishery ground' directly. People living in the area that now forms Dadohae National Park planted the trees and built the stone walls known collectively as "woosil," the purpose of which was to protect the village from the strong sea winds. Though the "woosil" functions as a windbreak in the modern sense of the term, in ancient times, it had an added spiritual meaning.

Restructuring of marine food product and resource transporting system: Salt produced from the tidal flats in Dadohae National Park is a product of the ecosystem. That is, it is not simply a naturally occurring

product, but a human product. By branding "sun-dried salt" produced according to indigenous methods, it can contribute to sustainable economic development. Food resources from the sea and tidal flat (fish, shellfish, algae, salt, etc.) provide the essential nutrients (proteins, vitamins, minerals, etc.) to sustain human life. The economic system for obtaining, distributing, and consuming these food resources influences the future possibilities for environmentally sound and ecological development. The characteristics of the natural landscape and geomorphology, including islands, tidal flats, and fish biodiversity, in Dadohae National Park are fundamental to the development of maritime food resources. These resources, which include tangle weed, abalone, sea cucumber, laver, and brown seaweed, are gathered according to appropriate traditional methods and symbolize the cleanness of the sea water as being environmentally sound.

In order to strengthen the environmentally friendly characteristics and locality of maritime food products, programs to strengthen local technologies in the fishing industry, environment industry and cultivation should be developed. Concerning distribution, consumers can be made aware of the need for environmental conservation and environmentally friendly labor practices at the time of purchase. Moreover, consumers can gain confidence in local food systems and ensure their economical value through the cooperative system among fishermen, distributors, and consumers. Considering that there is an increasing desire for widened socio-cultural activity in Korean society, such a cooperative system would help support these socio-cultural activities while ensuring economic activity.

Activation and discovery of indigenous knowledge: networking of local people-university-UNESCO-international society: Local universities and institutes have examined the characteristics of island and tidal flat ecosystems, and studied sustainable development using those ecological resources. Jangdo wetland in the core zone of Heuksando, which was designated as a "Wetland Protection Area" in 2004, was renamed as the Ramsar wetland site in 2005. Tidal flats in the Jeungdo area were designated a 'Provincial Tidal Flat Park" in June 2008. In order to designate the tidal flat ecosystems in Bigeum-myeon and Docho-myeon in Shinan-gun as a "Wetland Protection Area," the local government is trying to establish an "island ecosystem conservation act." The national government is trying to find a solution to the integrated environmental management of coastal and island areas, including uninhabited islands. The National Park Migratory Birds Center at Hongdo is carrying out diverse research concerning migratory birds. For the past 25 years, MNU Institute of Islands Culture has studied sustainable fishing, maritime culture and ecology. The institute has also worked in coastal geomorphology, ecosystem landscapes, cultural ecology, and indigenous knowledge regarding tidal flats. In addition, there are many related departments, such as ecology, biology and the fishing industry in MNU. Diverse experiments and exercises on island ecosystems, maritime bio-organisms and tidal flat ecosystems are carried out at Mokpo Maritime University and Jeonnam National University near Dadohae National Park. There is a national network of non-government organizations (NGO) that manage the local ecosystem and environment (Korea Federation for the Environment Kwangju and Jeonnam chapters, Blue 21, Eco-Horizon Institute). In particular, the Mokpo Korea Federation for the Environment, established in 1997, has tried to conserve the wetland ecosystem and maritime environment. Through international networks of foreign researchers (i.e. Japan Wetland Association Network, JAWAN), a civil monitoring cooperation was set up and a conservation strategy for the tidal flat ecosystem in Shinan-gun was established. Every summer, a public awareness program-targeting junior and high school students regarding island and tidal flat ecosystems (such as tidal patterns, traditional fishing practices, and food culture) is held in Shinan-gun.

Acknowledgements

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The prospects of Russian-Mongolian-Chinese Dauria International Protected Area development as a model of MAB Program realization in Dauria transboundary ecoregion

O.K. Kirilyuk, V.E. Kirilyuk
Daursky Biosphere Reserve and
Institute of Nature Resources of Russian Academy Science Siberia Branch

Daurian steppes are a vast region situated on the junction of the borders of three states – Russia, Mongolia and China. Among the Central Asian steppes Dauria is distinguished by the peculiarity of climatic conditions, relief, vegetation and wildlife. Daurian steppe – is example of well-preserved terrestrial ecosystems of Central Asia, they has key significant for conservation world biodiversity. In the Dauria ecoregion and Dalainor-Torey hollow migration route of many bird species is narrowed, it is the so-called "bottleneck". Almost 360 bird species including representatives of mountain-taiga and tundra complexes stop in Dauria during their flight or nest, more than 25 species of them are put into IUCN Red Data List as globally vulnerable or endangered. Among them 4 species of cranes (Siberian crane, Japanese crane, White-naped crane and Hooded crane), Great Bustard, Swan Goose, Baer`s pochard, Baikal teal, Relict gull, Asiatis dowitcher. For many species Dauria steppes are key habitats (for example: in region inhabited near 13 % of world population of Red-Crowned crane, 80% - of Swan goose, 66% - of Great Bustard, 29 % - of White-naped Crane etc.) (Kirilyuk, Goroshko, Kirilyuk, 2006). More than 90% of world population of Mongolian gazelle inhabited Daurian steppe too.For conservation of unique ecosystems and biodiversity of Dauria in 1994 the official Agreement between Russia, Mongolia and China on creation of a joint protected area (Russiain-Mongolian-Chinese Dauria International Protected Area) in the near-border regions of the three countries was signed. Three national reserves were included to this international protected area: Daursky (Russia), Mongol Daguur (Mongolia) and Dalainor (China) (Fig. 1).

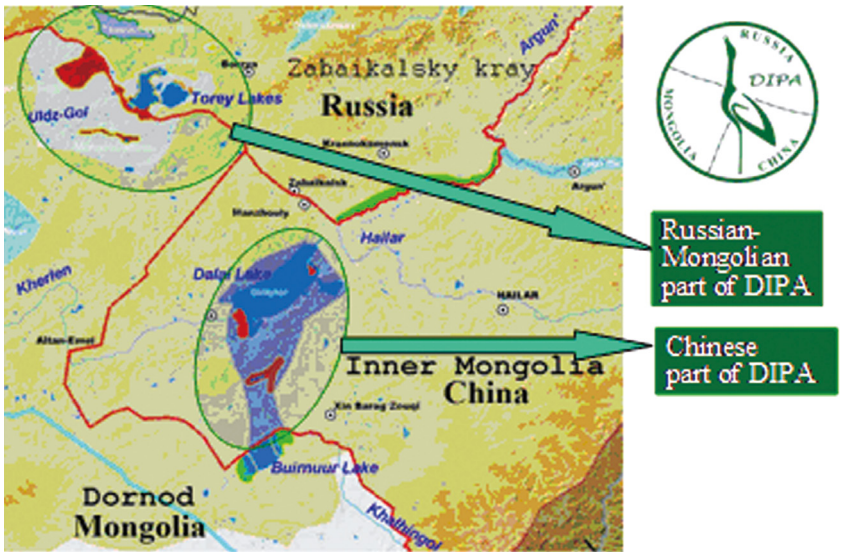

Figure 1. The scheme of DIPA situation.

The main tasks of joint reserve are researching of Dauria nature, monitoring, environmental education and cooperation in protection of rare species. Other important task is a promotion of environmental cooperation between 3 countries. Since the moment of the transboundary reserve foundation totally more than 70 joint

scientific research expeditions have been held. By now investigations have covered about 300,000 sq. km including spacious flowless steppe area and nearly all the upper part of the Amur basin from it sources to the Great Khingan. Wild scientific works revealed some features of Darian ecosystems functioning.

Of special importance for Dauria is alternation of wet and drought climatic periods that causes considerable change of distribution area and exterior of the ecoregion vegetation and wildlife. The most significant cycles within a century have the duration of about 30 years (from 25 to 40) (Obyazov, 2007). During these cycles large-scale fluctuations of water level in the lakes occur, as well as considerable transformations of wetland and steppe habitats. In droughty periods many lakes dry out. For example, full drying of Barun-Torey Lake was in 1982 and repeated in 2009. Decrease of the water level of steppe lakes in dry periods leads to rise in water salinity, which, in its turn, causes death of fish and changes in number and composition of other hydrobionts. Food base of waterfowl and near-water birds changes radically, which influences their number.

Observations show that the change of climatic cycles accompanied by increases in mean annual temperature (Fig. 2). This causes an increase in evaporation of reservoir and rivers, exacerbates the negative effects of the dry period, and, ultimately, accelerates the processes of desertification. For example, the most lowest level of the Argun River, for all the history of observations was fixed in 2006.

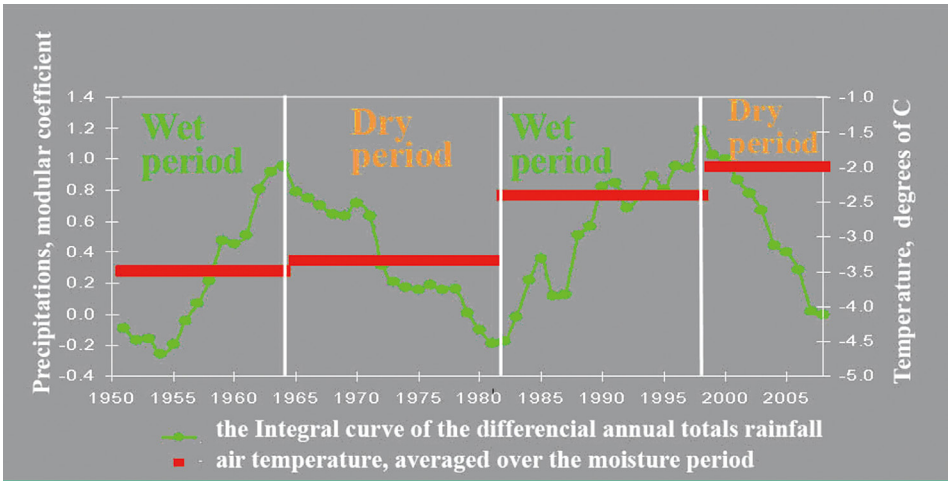

Figure 2. Cyclical changes in annual rainfall in Daurian ecoregion (by Obyazov, 2007).

But the changes in floodplain of big river are slow and not so critical. Because of that the big rivers (such us Onon, Hailar-Argun, Kerulen) has key significance for water birds, migrants and breeding in Dauria species. Thus spaced sites in Dauria have close relationship between it other. It makes little sense to protect one single wetland cluster in the Daurian Ecoregion, since most of the area's wildlife migrates among the steppe's scattered wetlands according to 30-year drought cycle patterns.

Besides common redistribution of birds' population in Dauria, the changing of climate causes changes of borders of animals natural habitats. For example, the drying up of steppes caused removing of the main places of Mongolian gazelle breading and wintering to the north (Fig.3). Some time lack of fodder and watering cause mass fast migration of gazelle (last of them was in spring 2009). At the same time south border of habitat of Siberian roe deer is removing to the north too.

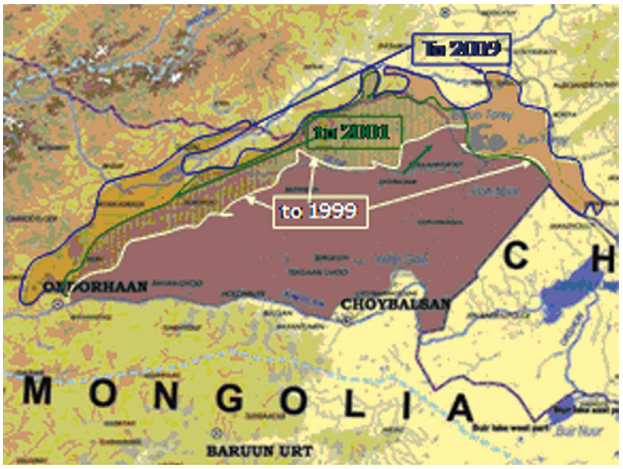

Figure 3. Expanding territory of North-Kherlen population of Mongolian gazelle in 1994-2009

The change of wild nature influences on economical activity of human. Productions (as like as farming) concentrates near the last sources of moisture in dry periods and rival with wild animals. For example, increasing of number of livestock in dry period causes quick degradation of pastures but then - loss of livestock. For example, upper limit of artificial augmentation of sheep total number in Chita region was in peak of dry period (1981-1982). More than 30% of pastures to 1990 were destroyed. Part of them reconstructed only after 10-15 years (without pasturable loading). Abandoned fields reconstructing is more than 30-35 years. But before this time depending of recurrence of climate did not take into account of business planning. As result we have big problems: quality of pastures is decreasing, pollution of surface waters is increasing.

Besides water-intensive productions (such as mining, farming, etc) was planned in the region with deficit of moisture by three countries. Large irrigation works was become to conduct realization of these plans in China, are planning to carry out in Mongolia (see website www.dauriarivers.org). Russia could be forced to make the same works. Thus, only the existing water networks in the basin of the Argun River near the border of Russia and China are able to select from 40 to 90% of the flow of the river in the plains area in the dry period. Irrigation can cause draining of rivers water-meadows, salinization and degradation of soil. Active bank protection causes destruction of floodplain too. As a result natural balance and adaptation to climate changes which had been forming during thousand years in Dauria can be destroyed, and globally significant ecosystems are lost forever. Today DIPA ornithologists certifies that the total number of birds in the floodplain of the Argun River fell by more than a hundred times (!) for the past 5 years (Goroshko,2007). Primarily this is due to drying of the floodplain and habitat loss. It certainly will reduce the number of birds in the Dauria international reserve, all part of which have the status of wetlands of international importance (Ramsar convention). In addition, a direct impact to the strictly protected part of the reserve "Dalainor" has had already because of reset through the newly constructed channel of Hailar River water less pure than the water of Lake. Today, a number of bilateral agreements in the field of transboundary collaboration exist between Mongolia and Russia, between Russia and China. The main mechanism of environmental interaction is the work of the bilateral Working Groups in preparation for bilateral meetings of Heads of Governments.

There is a trilateral agreement about the organization of international reserve “Dauria”. Making of joint efforts to protect natural systems of international reserves is provided by this agreement. At the same time, no one of the bilateral agreements do not envision co-ordination of economic projects which could have a negative impact on ecosystems of neighboring side (including its protected areas) and Dauria in general. The mechanism of making trilateral decision, which ensures three countries interests of the organization of

environmental management in border areas, is not worked out. From 2006 to 2008 the agreement of protecting the ecological state of the basin of the Argun River between the Inner Mongolia Autonomous Region and the Chita region had been in operation. In 2008 the Chinese side refused to continue the work within it, found that the agreement on transboundary waters is sufficient on the federal level. At the same time, such inter-regional cooperation between Heilongjiang Province and Amur Region of Russia is continuing.

To develop joint strategies for adapting to climate change at Dauria and organizations nature using which could satisfy interests of all three countries, the Chita region Russia took the initiative to organize trilateral working group at the regional level in the last year. And this group has to include representatives of governments, scientists, environmental protection, monitoring, and economic structures of Russia, Mongolia and China. One of the mechanisms of sustainable environmental management in the region can become creation of the trilateral biosphere reserve on the basis of international reserve “Dauria”.

The issue of creation the TBR on the basis of DIPA has been discussed for more than 5 years. Particular attention was paid to it at the last meeting (March, 2006) of the Joint Commission on International Reserve - the highest governing body of the trilateral reserve. Today, all parts of the international reserves are the biosphere reserve. Successes of environmental, scientific, and educational cooperation are real and proven. Research of the reserve’s staff provides the necessary information and basis for making management decisions in the field of environmental management. Combining all three part of DIPA into single transit zone, we can create a real area of Cooperation at the junction of three countries. This zone provides realization of the principles of sustainable development and the major ideas of the MAB program - a compromise between the interests of socio-economic development and conservation of wildlife in the region. The first necessary step is enlarging of the DIPA territory to protect of most important biodiversity conservation areas. The most perspective direction is creation new joint parts. There are Lake Buir-Nur (Chinese-Mongolian border) and the wide valley of the river Argun (Russia-China border) (Fig.4).

Figure 4. Proposed schemes to DIPA enhance. Green circle - a promising area for the establishment of a common transit zone of the transboundary biosphere reserve. Yellow circles – placement of the proposed new cross-border parts of DIPA.

Works of the creation of the reserve "Daursky" part in the valley of Argun River and of the expansion of protected areas network near the border of Mongolia and China have already begun by Russia side. Scheme of

the planned development of the territories under the jurisdiction of Biosphere Reserve "Daursky" is shown on the Fig. 5. Total area of protected territories and zones of cooperation will increase more than threefold. The process of creating the national refuge "Valley of Dzeren" is in the final step. Creating of part on the Argun River is in the last step of approvals with local people. During the approvals local people note that the creation of a new part of the reserve will have sense only if the Argun River is protected by two countries on both sides. The two protected natural areas of the local level are located in the valley of the Argun River on the Chinese side. They can be a basis of creating a common cross-border part of the international reserves on the Argun River.

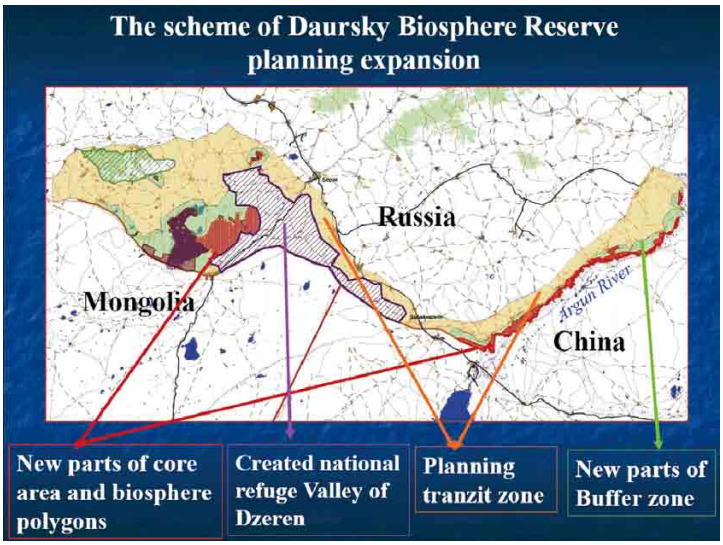

Figure 5. The scheme of Daursky Biosphere Reserve planning expansion

In conclusion, we consider it is a pleasant for us to thank once again our Chinese and Mongolian colleagues of the Mongol Daguur and Dalainor reserves for fruitful cooperation. We would like to express our hope that arguments are suggested in this report will be reflected in decisions of this meeting EANBR and in decisions of national and regional level of governments.

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Country Report - Democratic People's Republic of Korea

Prof. Dr. Son Kyong Nam
DPRK MAB National Committee,
State Academy of Biological Sciences
DPR Korea

In the past two years since the 10th EABRN Meeting had been held in Mongolia, MAB National Committee of DPRK has exerted great efforts to implement MAB programme and Madrid Action Plan (MAP) which had been agreed at the 3rd World Congress of Biosphere Reserves in Madrid in February 2008.

Activities of MAB National Committee during 2008-2009

Playing Important Role in Conducting the National Projects related to Biodiversity Conservation

Recognizing the importance of conserving environment and biodiversity, the government of DPRK takes the every possible measure for the conservation of nature and environment. The government developed several kinds of programmes targeted to restoring the degraded ecosystems, afforesting and reforesting whole country and conserving biodiversity, and achieved big successes. Firstly, MAB National Committee has suggested the considerable recommendations for the governing agencies to make the national policy and formulate the statutory provisions related to nature and environment conservation. Recently, MAB National Committee has been deeply appreciated by the state law making agency for its positive contribution to newly formulating the law of nature reserve in DPRK which will largely reinforce to establish the statutory framework for implementation of UNCBD in DPRK.

Secondly, MAB National Committee has actively been involved in the national project for stocktaking of plant and animal resources all over the country which has been programmed to be implemented during the period of 2008-2009. For implementation of this project, MAB National Committee has been assigned with the responsibilities for drawing up the investigation manual and conducting the training workshop for field survey members and has successfully fulfilled. The stocktaking results gained through this national project will greatly contribute to developing and practicing the national strategy for biodiversity conservation. In addition, MAB National Committee has coordinated the research project aimed to assess the plant, animal and ecosystem diversity of Mt. Paektu, Mt. Myohyang and Mt. Kuwol Biosphere reserves and been conducted with involvement of lots of researchers from the State Academy of Sciences, several universities and the Ministry of Land and Environment Protection in DPRK.

Thirdly, MAB National Committee has performed its work in close relation with national efforts for implementation of UNCBD, UNFCCC and UNCCD. MAB National Committee has participated in several cooperation projects for developing 3rd National Report of Biodiversity, 1st National Report of Climate Change and 2nd National Report of Environmental State in DPRK, and through such performances, has contributed to establish the national action plan for conserving biodiversity in response to the climate change and land degradation in DPRK.

Planning and Coordinating National Action according to MAP

The Madrid Action Plan (MAP) articulates actions, targets and success indicators, partnerships and other implementation strategies and an evaluation framework for the WNBR. In attempting to orient MAB and the

WNBR activities during 2008-2013 in the face of new challenges in an ever-changing world, the MAP defines 4 main action areas, with 31 targets and 65 actions that are critical to achieving the vision and mission of MAB Programme. Targeted actions are to be taken at the local level (the individual Biosphere reserves), the national level (MAB National Committees/National Commissions for UNESCO) and the international level (regional and sub-regional networks, UNESCO-MAB Secretariat).

MAB National Committee of each country has strongly been recommended to develop its action plan to meet its responsibility within MAB Programme. Regarding to the key role of biosphere reserves in MAB Programme, special attention for developing national action plan should be paid in enhancing the role of biosphere reserves.

Since the MAP has been agreed in February 2008, MAB National Committee in DPRK has immediately initiated in programming the national action plan, coordinated national activities related to MAP and archived a lot of results. National action plan for implementation of MAP has been developed in guidance of MAB National Committee in DPRK in wide participation of and positive cooperation with lots of stakeholders, and submitted to UNESCO Beijing Office in last year. MAB National Committee has programmed several kinds of activities and coordinated their proceedings according to the national action plan. Detailed targets and actions which have been planned to be carried out during the period from 2008 up to now and proceedings are summarized as follows.

Target 2: Increased cooperation and coordination of biosphere reserves with existing international programmes and initiatives

Action 2.1: Utilize biosphere reserves in UNESCO's intergovernmental scientific programmes in addition to MAB

MAB National Committee pays great attention to and makes its best efforts to develop new projects related to biosphere reserve management and incorporate the biosphere reserves into other international programmes and projects, including UNESCO's intergovernmental scientific programmes, by closely collaborating with other national authorities such as MoLEP responsible to implementation of UNCBD, UNFCCC and UNCCD.

Target 6: Communication strategies for each biosphere reserve, integrated with national and higher levels

Action 6.1: Implement a communication strategy on environmental, economic, social, spiritual, cultural and political importance and benefits of biosphere reserves and the WNBR, directed to national governments, policy makers, journalists, local communities and other target groups

With the deeply appreciation of importance of developing and implementing the communication strategy for biosphere reserves and WNBR, MAB National Committee has already put this action in national action plan and is exerting much effort. MAB National Committee is playing the key role in developing and operating the mechanism and strategy for communicating the information on the environmental, economic, social, spiritual, cultural and political importance and benefits of biosphere reserves to the state governing agencies and mass media, the institution for science and education and other target groups.

Target 7: Functional MAB National Committees in each country, managed in a manner assuring adequate representation of biosphere reserve coordinators and other key stakeholders

Action 7.1: Create or restructure MAB National Committees

Action 7.2: Develop a structure, strategy and action plan for each MAB National Committee to assist biosphere reserves meet their responsibilities within MAB Programme, and support the planning phase for new nominations

The past structure and role of MAB National Committee in DPRK has been reviewed and recently renewed, and the development of its strategic action plan to assist biosphere reserves meet their responsibilities within MAB Programme and support for new nomination are now in promotion.

Target 10: Open and participatory procedures and processes in the designation, planning and implementation of biosphere reserves

Action 10.2: Every biosphere reserve should establish a management committee comprising stakeholders representing different activity sectors of all three zones

MAB National Committee has conducted all procedures and processes for designation, planning and implementation of biosphere reserve in an open and participatory way and already organized the management committees involving the stakeholders representing different activity sectors of all three zones in two biosphere reserves, Mt. Paektu Biosphere reserve and Mt. Kuwol Biosphere reserve.

Target 13: Functional zonation in all biosphere reserves established, particularly with regard to the transition area and the development function

Action 13.1: Develop and apply practical tools and guidelines for zoning at the national level

Action 13.4: Clearly define the outer boundary of the biosphere reserve in determining the transition area through stakeholder consultation

The guideline draft for the designation of biosphere reserves has been developed in last August and the functional zonation of biosphere reserve has also been comprised in this guideline. MAB National Committee also expects the valuable consultations and recommendations for functionally zoning the biosphere reserve from MAB Programme and UNESCO.

Target 17: Trained Biosphere reserve manager and other relevant stakeholders

Action 17.2: Promote capacity enhancement programmes for biosphere reserve administrators and managers, such as on adaptive management, including conflict resolution and negotiation skills

The short-term training courses aimed in building capacity of the biosphere reserve managers and relevant stakeholders are programmed to be held in November 9-13, 2009.

Target 29: Promote partnerships

Action 29.1: Establish cooperation plans including all sectors of society to champion cooperative activities ranging from education and research to sustainable use of environmental goods and services

MAB National Committee is developing new cooperation project targeted to enhance the national and regional capacity to adapt and mitigate the climate change in collaboration with lots of institutes of the State Academy of Sciences in DPRK.

Cooperation by UNESCO

Several projects have been successfully implemented with the support from UNESCO Beijing Office.

Nomination of the new biosphere reserve

- As mentioned above, Mt. Myohyang Biosphere Reserve has been newly nominated as third international biosphere reserve in DPRK in May 2009.

Development of public awareness materials

- CD-ROM of multimedia with topics of introducing Mt. Kuwol Biosphere Reserve have been developed and distributed.

Development of Atlas of Biosphere Reserve Network in DPRK

- With the initiative and cooperation of UNESCO Beijing Office, the Atlas of Biosphere Reserve Network in DPRK has been developed, published and distributed in last year.

MAB Young Scientist Award

- The project for 2007 MAB Young Scientist Award was successfully implemented and the project for 2009 is now on going.

Development of a book related to biodiversity

- The book titled with "Inventory and Impact Assessment of Alien Plants in DPR Korea" has been written and published in this year.

Overseas Training with topics of biosphere reserve management

- Four participants have attended in 3rd EABRN-UNESCO Training Workshop on "Remote Sensing and GIS for Biosphere Reserve Management to Adapt Climate Change" which has been held in China in 2009.
- New project proposals have been submitted to and reviewed by UNESCO Beijing Office.

Mt. Myohyang Biosphere Reserve

Mt. Myohyang area has been nominated as Biosphere Reserve in May of this year. This is the third one in our country following Mt. Paektu Biosphere Reserve and Mt. Kuwol Biosphere Reserve. Mt. Myohyang Biosphere Reserve is situated in the middle part of DPRK and covers some areas of three provinces including Jagang Province and N. Pyongan Province and S. Pyonan Province. In terms of acreage, core area is 9,652 ha, buffer zone is 19,050 ha and transition zone is 45,769 ha, so Mt. Myohyang Biosphere Reserve covers the area of 74,501 ha in total. Mt. Myohyang is one of the five famous mountains in DPRK and world widely well-known. According to the historical record, it has been said that this mountain had been named as Myohyang in 1028 A.D. and the name of this mountain had been derived from the implication of having peculiar beauty and deep fragrance. The mountain is toped with Pinus pumila, Thuja koraiensis and Sabina sargentii, is dressed with hundreds kinds of beautiful flowers and is full of fresh fragrance all over the year. That's why this mountain has been called as Mt. Myohyang.

Magnificent peaks of Mt. Myohyang make the breathtaking landscape. The highest peak of Mt. Myohyang, Piro Peak, rises 1,909 meters above sea level. Except for Piro Peak, Mt. Myohyang embraces numerous high mountains with elevation of more than 1,000m such as Chilsong Peak(1,894 m), Wonmang Peak (1,600m) and Popwang Peak(1,390m) and so on. Moreover, there are a lot of granite-gneiss cliffs made by historically long-proceeded erosion and denudation and there are also great number of waterfalls and torrents in Mt. Myohyang. Such cliffs, waterfalls and torrents are in well harmony with natural environments and add the beauty and ecstasy to Mt. Myohyang.

Geographical Condition

Mt. Myohyang comprises lots of mountains with height of 200~1,909 meters above sea level, so, from this large altitudinal gradient, Mt. Myohyang could have involved all characteristics of the mountainous areas low, middle and even alpine. Mt. Myohyang Biosphere Reserve has no strong winds as it is surrounded by high peaks. But its high terrains make the winter longer than that in the plains, so ice and snow are spotted along the high peaks even until June. The climate is that of the northern temperate zone. The average annual temperature of this area is 9.1℃ and the average temperature of January is -7.14 ℃ and that of July is 23.5℃. The precipitation in Mt. Myohyang is a little larger than that in other areas. The annual precipitation of Mt. Myohyang is about 1,330 millimeters and that of the rainy season, July and August, was 321.2 to 397.5mm and that of January was the lowest 6.3mm. The soil of Mt. Myohyang Biosphere Reserve is forest dark gray soil formed mainly from granite and granite-gneiss. The main stream is the Hyangam Stream, a tributary of Chongchon River. It is fed by a lot of small streams rising from the high peaks such as Popwang, Hyangno, Piro and Akdae. The bed of whole stream is covered with rocks, pebbles and sand. This perennial stream flows rapidly, rises up to the level of overflowing in the rainy season and lowers almost to trickles in the drought season.

Biodiversity

The taxa of higher plant in Mt. Myohyang Biosphere Reserve consist of 122 families, 466 genera, 1066 species (Table 1). Among them, there are 43 species (4%) of Pteridophyta, 17 species (1.6%) of Gymnospermae and 1,006 species (94.4 %) of Angiospermae, the number of species of higher plant in Mt. Myohyang accounts for 32.6% of the total in DPRK. Mt. Myohyang is rich in endemic plants as well as endangered and rare species. The number of endemic species and endangered species respectively reaches to more than 30 and 16 species.

Table 1. Taxa of Higer Plant in Mt. Myohyang Biosphere Reserve

Classification Unit		Family	Genus	Species
Pteridophyta		11	24	43
Gymnospermae		7	11	17
Angiospermae	Dicotyledoneae	90	354	847
	Monocotyledoneae	14	77	159
Total		122	466	1066

The taxa of vertebrates in Mt. Myohyang Biosphere Reserve consist of 32 orders, 67 families, 208 species which contributes to 15% of the total taxa in DPRK (Table 2).

Table 2. Taxa of Vertebrates in Mt. Myohyang Biosphere Reserve

Class	Order	Family	Species		
			Total in DPRK	Mt. Myohyang	Rate(%)
Fish	6	7	850	18	2.1
Amphibian	2	5	11	10	71.4
Reptile	2	3	20	7	38.0
Bird	16	46	420	135	32.1
Mammal	6	16	79	38	48.1
Total	32	67	1383	208	15.04

The survey conducted so far has concluded the taxa of mammals in Mt. Myohyang Biosphere Reserve as 6 orders, 16 families, 31 genera and 38 species (48.1 % of total in DPRK) which are divided into 13 carnivorous species (76.4%), 5 Artiodactyla species (71.4%) and 9 rodent species (53 %). The taxa of birds in Mt. Myohyang Biosphere Reserve consist of 16 orders, 46 families, 82 genera, 195 species, which amount for 32.1 % of total in DPRK. Characteristically, the bird species are dominated by those of northern origin and vast range, as a result of the geographical locations of this area. In the deep valleys and pools are found Hynoloius leekii, Onychodactylus japonicus, Bombina orientalis, and Rana temporarya, and around the temples, house-sites, stone fences and the foot of mountains, Takydromus amurensis, Piuodon Vutozouatum, Elaphe rufodorsata and grass snake. The taxa of amphibian and reptile in Mt. Myohyang are shown in Table 3. The surveys in Mt. Myohyang Biosphere Reserve indicate 10 species of amphibians, which accounts for 58.8% of the total in DPRK, and 7 species of reptile, which accounts for 25.9% of the total in DPRK. They include such endangered or rare species as newt, Onychodactylus, Bufo vachei, Takydromus woltevi, boa and viper.

The taxa of fish in Mt. Myohyang consist of 7 families, 16 genera and 18 species (Table 4). The fish species found in the Hyangam Stream are Zacco platypns, Ladislavia taezanowskii, Plecoglossus altivelis, Hemibarbus longerostris and Moroco oxycephalus, all cold-water and clear-water species. As a tributary of the Chongchon River, Hyangam Stream has favorable condition for fishes.

Table 3. Taxa of Fish in Mt. Myohyang Biosphere Reserve

Order	Family	Genus	Species
Clupeiformes	2	2	2
Cypriniformes	1	10	12
Siluriformes	1	1	1
Anaguilliformes	**1**	**1**	**1**
Perciformes	**1**	**1**	**1**
Gobiinaformes	1	1	1
Total	7	16	18

History and Culture

Mt. Myohyang has the International Friendship Exhibition, the grand monumental edifice of the Worker's Party era, and also well preserves the historical and cultural heritages including Pohyon Temple and Pohyon Temple-related relics. Pohyon Temple was established in 1042 and is made up of lots of auxiliary buildings such as Daeung Hall, Manse Tower, Kwanum Hall, Ryonsan Pavilion, Haesan Pavilion, Mansu Pavilion, Chonwang Gate and so on. And Pohyon Temple has several pagodas such as Octagonal 13-Storyed Pagoda. In Pohyon Temple, there have been conserved several Buddhist statues and the complete collection of Buddhist Scriptures printed from 80,000 wooden blocks. In addition, there are other lots of Buddhist temples such as Kumgang hermitage, Sangwon hermitage, Sungin hermitage, Bulyong Temple and Wonmyong Temple, and the stone lanterns and stone monuments at Mt. Myohyang. Especially, the Kumgang hermitage is where Saint Sosan, famous Buddhist priest of the Koryo, lived in. Besides of them, Mt. Myohyang still preserves Tangun cave which is associated with mythology of King Tangun, the founding father of the Korean nation. And Mt. Myohyang also preserves the national cultural inheritance.

Living monuments, such as Morus bombycis aged about 400 and Rhododendron yedoense community aged more than 600 in field of Bulyong Temple and Pinus densiflora aged with hundreds and Tilia megaphylla aged

more than 300 which have still been preserved at Mt. Myohyang make this Biosphere reserve more valuable for conservation.

Mt. Myohyang as a Biosphere Reserve Conservation Function

The natural landscapes of Mt. Myohyang Biosphere Reserve are build up by lots of high peaks, steep cliffs and mysterious rocks, pools, torrents and waterfalls, and elaborate the peculiar beauty of Mt. Myohyang and, at the same time, create the diverse habitat conditions which would become the base for diverse flora, fauna and ecosystem. The flora of Mt. Myohyang Biosphere Reserve is very diverse with more than 1,000 species, among them, the major framework species of forest ecosystem are Quercus acutissima, Pinus densiflora, Betula schmidtii, Acer psedo-sieboldianum, Fagara schinifolia, Picea jezoensis, Pinus pumila, Sabina sargentii and Thuja koraiensis. There are 16 endangered plant species including Rhododendron chryanthum, Keumkangsania latiseoala, Rhododendron yedoense, Sasamorpha purpurascens, Thymus quinquecostaus and more than 30 endemic plant species such as Campanula takesimana, Alnus vericularis, Viburnum koreanum, Peucedanum coreanum and Saussurea myokoensis. The highland of Mt. Myohyang Biosphere Reserve becomes the habitat of Naemorhaedus goral, Moschus moschiferus, Ursus thibetanus and Sus scrofa, and the lowland of it involves nearly almost fauna found in the mountainous areas of north-western part of DPRK. Otter (Lutra lutra), the rare and protected species, inhabits in Hyangam Stream. Pteromys volans and Eurystomus orientalis have been designated and protected as the living monuments of DPRK (no. 82, 83). Mt. Myohyang Biosphere Reserve, including transition zone, is the habitat and transit passage for at least 200 species of birds including Aix galericulata, Gavia stellata, Gavia arctica and Mergus squamatus, which has been globally endangered, and so on.

Development Function

As considering about the development function of Mt. Myohyang Biosphere Reserve, special attention should be focused on the tourism potential. The annual number of tourists coming to Mt. Myohyang reaches more than 400,000. There have already been established necessary infrastructures for tourism development including the highway with distance of 145 kilometers from Pyongyang to Hyangsan and Hyangsan Hotel and Chongchon Hotel and so on. And, besides of tourism at Mt. Myohyang Biosphere Reserve, several kinds of natural resource management and development approaches including collection of medicinal plants, edible herbs and wild fruits, agro-forestry on the sloping land and sustainable utilization of water-power resources are also significant in terms of development function.

Logistic Function

The logistic function of Mt. Myohyang Biosphere Reserve should also be viewed in the light of the site for research and learning and the site for public awareness and education. As regards to this function, DPRK has rich experiences and competent experts and appropriate institutional mechanism. MAB National Committee in DPRK will keep in close touch with UNESCO and exert all possible efforts to meet its responsibilities as a party of UNESCO's MAB Programme and implement the national action plan according to Madrid Action Plan.

Country Report - Japan

Akiko SAKAI
Japanese Coordinating Committee for MAB
Research Institute of Environment and Information Sciences,
Yokohama National University, Japan

Current situation and organization of MAB Japan

The Man and Biosphere Programme has not been so activated yet in Japan, although the situation has been improved for the past two years and we are on a hopeful way now. In this report, I briefly report MAB and BR issues in our country and implementation of MAB Japan.

MAB Japan does not have an independent organization and don't have a special officer or full-time worker for MAB. Thus, the chair of the National Committee, which is organized by the Ministry of Education, Culture, Sports, Science and Technology, organizes the Japanese Coordinating Committee for MAB that consists of scientists, mainly ecologists and biologists, and the Coordinating Committee has supported MAB activities in Japan. Now, under the leadership of the chair of the National Committee, professor Kunio Suzuki, the chair of the Coordinating Committee, prof. Hiroyuki Matsuda and the former chair of the National Committee, prof. Kunio Iwatsuki, the Coordinating Committee acts to promote MAB in Japan.

BR Atlas and Biosphere Reserves in Japan

The Coordinating Committee has made monitoring of BR twice that published as "Catalogue UNESCO/ MAB Biosphere Reserves in Japan" for version I in 1999 and version II in 2007. Several experts described aspects of biodiversity, land use and economical and social situation, including problems and issues, for each BR. In accordance with an agreement in the previous meeting of EABRN, 2005, the Coordinating Committee published BR Atlas, "EABRN Biosphere Reserve Atlas, Japan" in Feb. 2009, using data in the Catalogue ver. II. The Atlas has the same format as ones of other countries that are written both in the native language and English, intending to be used by students and general citizens for learning nature values and significances of BR. Publicity of MAB and BR is another important purpose of the Atlas because it is a major subject in our country. The BR Atlas could be impressive owing to several scientists, naturalists and governmental organizations who kindly gave precious photos and data for GIS analysis.

Followings are snap-shots of the BR in Japan from the BR Atlas: there are four Biosphere Reserves in Japan; Shiga Highland BR, Mt Hakusan BR, Mt Ohdaigahara and Mt Ohmine BR, and Yakushima Island BR. All the Biosphere Reserves are located in mountainous region, including various altitudinal vegetation zones. As shown by Prof. Ohsawa in another report, this is important to adapt the climate change projected in future.

Shiga Highland Biosphere Reserve (13,000 ha including 1,000 ha of core area) is located in the Joshin'etsu Kogen National Park, where is a volcanic mountainous area covered with deep snow in winter. Core area is in sub-alpine zone (1,700 – 2,300 m a.s.l.), and you can see Japanese typical conifer trees such as firs (Abies) and hemlocks (Tsuga) and also moor vegetation. There are many ponds, lakes and moors in the high-land area. In the lower zone (800 – 1,700 m), the most common Japanese beech, Fagus crenata dominates the original forests, although many parts are changed to secondary forests of oaks (Quercus) and birch (Betula) trees. Although all of the core area is owned by private parties, it is conserved as a special protected area under the Natural Parks Law.

Mount Hakusan Biosphere Reserve (48,000 ha including 18,000 ha of core area) is in the Hakusan National

Park. It is one of the most snowy regions of the world, and sometimes snow falls over 10 m around the mountain top. This BR includes wide range of altitude (170 – 2,700 m a.s.l.), and you can see various types of vegetation. The mixed forests of Japanese beech and Japanese cedar (Cryptomeria japonica) that is typical vegetation on snowy mountains are developed in cool-temperate zone, and there are cold-temperate forests of firs, hemlocks and birches in sub-alpine zone. Near the mountain top, Pinus shrubs and alpine meadows are developed and sometimes snow avalanche prevents tree growth and tall-herb communities are distributed due to steep terrain. Core area is mainly located in sub-alpine zone, and strictly protected as a special protected area under the Natural Parks Law.

Mount Odaigahara and Mount Omine Biosphere Reserve (36,000 ha including 1,000 ha of core area) is in the Yoshino-Kumano National Park. It has a religious high value and has been a sacred site for ascetic monks since ancient time. In 2004, an old trail on the main ridge of Mt. Omine was registered as a World Cultural Heritage named "Kumano-Kodo", and now, all of this BR area is included in the Heritage. This region is characterized with many rainfalls. 4,800 mm for a year is one of the highest records in Japan. Such humid condition contributes high species diversity in this area. Various types of forests, especially warm-temperate forests that consist of unique conifer trees attract plant ecologists and biologists.

Yakushima Island Biosphere Reserve (18,958 ha including 7,559 ha of core area) is in the Kirishima-Yaku National Park and also has high biodiversity. Because of its special significance, it is registered to a World Natural Heritage, Special Natural Monument Area and Wildness Area, and strictly protected under these conservational laws as well as the Natural Parks Law. Flora and fauna quite diverse, and basic research on biodiversity is promoted in various ways. Because it is located in a boundary of sub-tropical and warm-temperate climate zones, there are many species with their northern limits or southern limits of distribution. From 1,000 m to 1,700 m forests of a temperate conifer, Japanese cedar, are developed. Because the Japanese cedar (Cryptmeria japonica) is the most important timber tree, it's plantation exists nation-wide. However, natural old forests are very rare, and Yakushima BR represents typical and precious ones.

Issues of the Biosphere Reserves

The four Biosphere Reserves have common issues. First, there is no transition area. Because all is the 1st generation BR registered in 1980/1981, the target is just conservation of bio-diversity. As those areas include precious nature of Japan and are protected well with national protection laws and as World Heritage, the site selection was appropriate for this purpose. However, the function of learning site for sustainable development is not sufficient that is focused in the Madrid Action Plan. This leads much more serious problem. People do not notice the original meaning of BR and MAB in Japan where there are many conservational systems, and then most people still don't know MAB programme and BR system in Japan.

On the other hand, it has been discussed that biodiversity is decreasing in countryside, called Satoyama, where long-term human activities produce unique landscape and flora and fauna. Conservation institution is biased to wildness area and the biodiversity issues in country landscapes are not sufficiently measured in Japan. In addition, such eco-sociological system is also a basis of Japanese culture. Thus, the Coordinating Committee has the idea that Biosphere Reserve system will be used as a countermeasure against cultural and biodiversity losses in rural areas, Japan.

Rapid increase of "sika" deer population is another common problem. Vegetation deterioration by the herbivore expands nation-wide, suggesting that only strict protection may harm nature value. The Committee thinks that such a harmful animal should be strongly controlled even for native species and in core areas.

Action of the MAB Japan

We think that new registration of BR becomes a break through, and it is the current main target of the Coordinating Committee. We have held meetings with national and local governments and other sectors officially and personally, and continue efforts of negotiation. Now, the science commission of Shiretoko World Nature Heritage, eastern Hokkaido, is interested in BR. Local governments around Mt. southern Alps (central Honshu) promote for BR registration. Aya town, in Miyazaki, Kyushu, has a precious old-growth evergreen broad-leaved forest, and it should be BR from a view of biodiversity. Iriomote Island with coral reefs in south-western Japan is also adequate because of rich and unique biodiversity.

We bereave that many scientists relating to conservation and traditional agriculture should understand BR concept, then the Coordinating Committee are planning to have an official symposium entitled "Promoting UNESCO's MAB, an international institution intending harmonious development and conservation, in Japan" in the 57th annual meeting of the Ecological Society of Japan (May 17, 2010). We invite Mr. Qunli Han (UNESCO, Teheran) as an excellent speaker about MAB activities in other countries and BR in East Asia. Professor Sun-Kee Hong (Mokpo National University, ROK) will talk about cases of the Republic of Korea, "Living harmoniously with man and nature systems in Shinan Dadohae BR". Regional activity of Southern-Alps aiming for registration of the area to BR and its nature values will be introduced by Prof. Takehiro Masuzawa (Shizuoka University), and Dr. Masahiko Ohsawa (National Committee for MAB; Nature Conservation Society of Japan) will make a speech entitled "Probability of MAB as a new conservational system for country areas in Japan". With an introduction by Prof. Hiroyuki Matsuda (Chair, Japanese Coordinating Committee for MAB) and Akiko Sakai and comments by the Ministry of Education, Culture, Sports, Science and Technology and the Ministry of the Environment, we expect that those speeches will enhance Japanese ecologists to consider BR mechanism and MAB concept as a part of the national strategy of environmental conservation.

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Country Report - Mongolia

Luvsandorj BazarragchaaSenior officer,
Department of Special Protected Area Administration
Ministry of Nature, Environment and Tourism of Mongolia

Development of the Strictly Protected Areas Network

The establishment of a legal foundation to regulate on biodiversity conservation has been given high priority by the Mongolian Government. In 1994 and 2000, the " Law on Special Protected Areas", "Law on Buffer zones of Special Protected Areas, "Law on Natural Plants", "Law on Wildlife", "Law on Hunting", and "Law on Forest" were adopted. In addition, over 30 Regulations and Resolutions have been approved to support those laws. In 1998, "The National Program on Special Protected Areas" was adopted . Former President of Mongolia, Mr. P.Ochirbat supported the movement "Our Living World-2000"initiated by WWF by expressing in his essay and informing the whole world that 30% of the total area of Mongolia.

Today, special protected areas of Mongolia encompass 21.9 million hectares covering 61 areas and roughly 14.0% of the whole country's territory. For the purpose to improve the management of the places registered in the biosphere network, we have been implementing successive measures directed to expanding and strengthening the international cooperation and improving the personnel capacity. By nowadays, the total area of the places included in the network of the Man & Biosphere reserves makes up 5.8 million hectare.

Table 1:Sites of Mongolia included in the Man & Biosphere Reserves Network

Name of SPA	Year of registering in the MAB network	Area (in hectares)
Great Gobi strictly protected area (SPA) "A" section	1990	4419000
Bogdkhan mountain SPA	1996	41651
Uvs Lake SPA	1997	712545
Khustai National park	2004	50620
Eastern Mongolian SPA	2005	570374
Mongol Daguur SPA	2007	103016
Total		5897206

Transboundary Cooperation

The Altai-Soyon Mountain Ecoregion is a large area (845, 000 km2), consisting of high mountain taiga, tundra, forest, wetland, steppe and desert biomes. The Altai Mountains extend along the Russian-Kazakhstan border in the northwest to the Chinese-Mongolian border in the southwest. The Western and Eastern Soyon Montains extend toward the east from the Altai mountains nearly to the southern tip of the Lake Baikal. The eco-region is largely within the Russian and Mongolian territories, 50 percent in Russia, 30 percent in Mongolia, and 10 percent each in China and Kazakhstan. Since 1998, Mongolia has concentrated its efforts on biodiversity conservation of the Altai-Soyon Ecoregion of the country. For example, Mongolia orgaized a Symposium on the Transboundary Biodiversity Conservation: Trilateral Approach, Experiences, and Visions on 29-31 March 2000, in Ulaanbaatar. Delegations from Mongolia, China, and Russia, representing governmental and scientific organizations as well as representatives of international organizations such as

GTZ, WWF, and UNDP attended the Symposium.
The symposium recommended to establish cooperation mechanism among the Eco-regional countries, to develop trilateral agreement for transboundary cooperation in the Altai-Soyon and Daurian Steppe Ecoregion, and to establish transboundary protected areas within the Eco-regions, which includes the Daurian International Protected Area of the Daurian Steppe Eco-region, and the Uvs Lake Basin, Altai Mountain, and Eastern Sayan Mountain areas in Altai-Soyon Ecoregion. Representatives of Mongolia who participated in the International CODOCA Conference on Discussion of the Development Strategies in Central Asia held in Urumqui, China signed a Memorandum of Intentions to Develop the Altai Convention. One of the major outcomes of the above mentioned conference is the parties agreed to give priority to establishing a Transboundary Biosphere Reserve Altai as a model for sustainable development of the area based on the principles of the Seville Declaration.

Delegations of Mongolia who head by Deputy Minister of the Ministry of Nature and Environment participated in the Working group Meeting on the Establishment Transboundary Biosphere Reserve Altai held on 22 June 2001 in Bonn, Germany. The participants recommended to develop Conception of Biosphere Reserve Development each parties and present at the next meeting.

A draft of agreement on Establishment of Transboundary Biosphere Reserve covering Uvs Lake Basin Biosphere Reserve with Russia has been prepared and the Parties came to the agreement.

International Conference organized by the MAB National Committee

The MAB National Committee organized the 5th Meeting of the East Asian Biosphere Reserve Network in 1997, Ulaanbaatar. Also the national committee jointly organized with WWF office in Mongolia an International Conference on Global Change and Uvs Nuur in the Uvs Lake Basin BR in 1999.

Research works in the Biosphere Reserves

Since 1997, Mongolia carried out the following research works in its BRs: In 1997-1999 the Mongolian-German Physico-Geographical Expedition was working in the Uvs Lake basin BR. The Mongolia 2000 International Congress was held at the Free University in Berlin from October 11 to 13, 2000, and the research results from the last decade of the 20th century were presented.

Since 1997 the Snow Leopard Study Project has been implemented in the above mentioned BR with support from WWF Mongolia Country Office. The project aims to conserve the snow leopard population and habitat in the Tsagaan Shuvuut and Turgen Mts as a model for leopard conservation activities in Mongolia. The activities include, survey and monitoring, public awareness and training of rangers and others. The project has recently developed a Snow Leopard Conservation Management Plan.

A study project on Conservation of the Great Gobi Desert and it's Keystone Species has been conducted with support of UNDP. The main objectives of the project are to improve human and technical capacity to better manage and conserve biodiversity and ecosystems in the Great Gobi SPA, to provide adequate information to support sound protected area policy, planning, and management decisions and to improve sustainable use practices and potential livelihood options in and around the Great Gobi SPA.

In 1997 and 2000, a number of studies for Wild Bactrian camels population size carried out by the researchers of the Denver Zoological Foundation, USA, Nature Conservation International, Germany, Mongolian Academy of Sciences and Great Gobi SPA.

The proposed Dornod Mongol SPA is offered outstanding field facility for study on largest remaining intact steppe ecosystems in the world. There are currently ongoing some research projects, such as "The conservation biology and migration of the Mongolian gazelle" conducted by researchers of Mongolian National University, Wildlife Conservation Society (USA), and Russian State Biosphere Reserve Daursky, and four-years project 'Grassland health and trends in Eastern steppe" by staff of Dornod Mongol SPA with scientists of the Institute of the Mongolian Academy of Sciences.

Biological reserve of fish in the Khoton, Khurgan and Dayan lakes of the proposed Altai Tavan Bogd BR was studied by researchers of the Instute of General and Experimental Biology of the Mongolian Academy of Sciences in 2000. There is also conducted Mongolian-Russian-American joint research on history and culture Mongol Altai region in 1998-2000. The park staff have conducted a number of survey on location, migration and biological reserve of snow leopard and argali sheep in 1999-2000.

The National Committee MAB of Mongolia has been carried out a Study project on the Development of Conservation Policy for Bogdkhan Mountain Biosphere Reserve (BR) with the financial support of the UNESCO Jakarta Office in 1999. Based on the information of the UNESCO project "Guidelines for Conservation Policy of the Bogdkhan Mt. SPA" was developed.

In 2001, a small project "Improvement of the Management of Bogdkhan uul BR" conducted with financial support of the UNSECO- MAB. The main outcome of the project is the headquarters and field rangers of Bogdkhan uul BR have been supplied with radio communication equipments.

Local community involvement

With regard to taking areas under protection and maintaining their protection at the appropriate level, a requirement was raised to create zones with the purpose of providing sustainable socio-economic development, to show support in improving living conditions of local community, and to strengthen protection of a given area. Accordingly, in 1997 the Parliament passed a Law of Mongolia on Special Protected areas' Buffer zones. The buffer zone council, which consists of representatives from the local government, local community, and protected area's administration are responsible for coordinating those activities carried out on the bufferzone territory. A number of small project have been implemented in the Uvs Lake Basin BR. For expamle, an initiative called "Irbis Enterprises" has been implemented as an incentive for herders to conserve snowleopard and cooperate for conservation activities in the buffer zone of the SPA. Additionally, few small projects were successfully implemented in the buffer zone of the area by the Mongolia Biodiversity Project of UNDP and GEF, such as the "Water Grinding Mill", "Willow Plant" and Mobile Hospital "Eneral-1" and "Eneral-2".

Activities for Human Resource Development

Conventional management for Strictly Protected Areas (SPA) in Mongolia is very much based on top-down approach. Department of the Strictly Protected Areas, Ministry of the Nature and Environment responsible for the management of SPAs. There are 11 SPA administrations in the country. About 300 people work in the above mentioned administrations including rangers and specialists.

Country Report – P R China

Yi Zhijun; Wang Jin
The Secretariat of Chinese National Committee for MAB,
52 Sanlihe Rd., Beijing, 100864, P R. China

Summary

This report is a summary about the activities of China MAB Committee since last EABRN meeting, which also includes some jobs of China MAB to implement the Madrid Action Plan of World Biosphere Reserve Network (WBRN) from the perspective of Eco-civilization. The report can be summarized as the following points:

1. to strengthen the communication and cooperation with the regional network on the platform of China Biosphere Reserves Network(CBRN), particularly focusing on the role of cultural diversity in the conservation of biodiversity and sustainable development;

2. to promote the concept of biosphere reserve among the general public and policy makers. Besides publishing the "Man and Biosphere" magazines, newsletters and updating the website of China MAB, we helped the national nature reserves to solve the problem of unsustainable development through the nomination process of a Biosphere Reserve, to improve the management plans, to promote the participation of stakeholders and to form wide partnership;

3. to combine the local practical problems with the review, policy study and on-site field visit, to strengthen the relationship between biosphere reserves and local government, to promote the dialogues among stakeholders and to find out the unbalance between the conservation of biodiversity and economic development, so as to form consensus and take practical action plans. The dialogue and participation of stakeholders is one of the approaches of biosphere reserves as the learning site of sustainable development;

4. to include more members into the CBRN, to hold the CBRN annual meeting, to summarize management lessons and raise common problems. In the past two years, 22 new members joined CBRN network. China MAB has undertaken policy study on the special licensed tourism activities in some biosphere reserves in China.

The participation and dialogue of the stakeholders of biosphere reserves and the emphasis on the cultural diversity is the foundation of biosphere reserve as the learning site of sustainable development.

In the period of implementing the Madrid Action Plan of World Biosphere Reserves Network, the opening of the joint regional meeting of the 11th EABRN and the 11th CBRN has undoubtedly promoted the communication of experiences and ideas of biosphere reserve managers from East Asian and other countries. As the organizer of this meeting, China MAB Committee introduced its main activities since the 10th EABRN, which fully revealed the role of CBRN as the platform for communication, cooperation, publication and implementation of the ideal of biosphere reserve. The contents of the China Country Report can be summarized as follows:

Strengthening of communication and cooperation between CBRN and other regional Network (SeaBRnet)

China MAB Committee, in collaboration with UNESCO Jakarta Office, held the Regional Seminar Ecotone

- SeaBRnet 2007 and the 9th Conference of the China Biosphere Reserves Network (CBRN) on the theme of Cultural Diversity: Foundation of Biodiversity and Sustainable Development at Maolan Biosphere Reserve on Nov.7-13, 2007. This meeting successfully promoted the communication and cooperation between SeaBRnet and CBRN and formed the consensus to enhance the linkages between cultural and biological diversity.

The meeting raised the issue of "cultural diversity promoting the conservation of biodiversity and sustainable development". With the development of globalization, we need to realize the root cause of the loss of biodiversity, the inharmonious relationship between man and nature and the development model of solely pursuing the growth of GDP is our neglect on our culture and its diversity. In particular, the theme of the meeting offered new thoughts for China's biodiversity conservation and the current mode of economic development. China, as one of the parties (2007) of "Cultural Diversity Convention (Protection and Promotion of the Diversity of Cultural Expressions Convention), took the lead in the implementation of the convention in China's nature reserve area.

The meeting adopted CBRN《Libo Consensus》and SeaBRnet《Libo Declaration》, which advocated the need to take actions to involve culture diversity into the management system of biodiversity conservation and the agenda of China's sustainable development.

The dialogue with local villagers and local government officials during the field visit has fully explained the value of cultural diversity. The local community has realized the foundation of regional sustainable development is cultural diversity and they need to solve local problems by using the concept of biosphere reserve. China Central Television (CCTV), People's Daily and its overseas edition, and other media reported the meeting.

About 200 participants attended this meeting, including representatives from Chinese National Commission for UNESCO, UNESCO Beijing Office, 12 South East Asian Counties, government officials from State Ethnic Affairs Commission, State Environmental Protection Administration, National Forestry Administration, National Oceanic Administration, Chinese Academy of Sciences, experts from Peking University, Tsinghua University and other environmental NGOs, journalists, 122 biosphere reserves managers of China Biosphere Reserve Network (CBRN) and local government officials at provincial, municipal and county level.

The participants were deeply impressed by the enthusiasm and good spirit of China CBRN members during

the meetings and the positive attitude of local government on the concept of biosphere reserve. This meeting was held before the 3rd World Biosphere Reserves Congress, which laid a good foundation for China MAB committee to organize biosphere reserve managers to attend the Congress and implement the Madrid Action Plan.

Biosphere Reserve Nomination

China MAB Committee takes the opportunity of biosphere reserve nomination to correct the problems of unsustainable development and to help biosphere reserves solve practical problems. The field visit and expert guidance is the important process of biosphere nomination. To clarify the problems and confusions in accordance with the concept of biosphere reserve is helpful for biosphere reserves to improve their management plans. In 2007, Xingkai Lake reserve and Chebaling reserve were successfully nominated as UNESCO World Biosphere Reserves.

To promote the concept of biosphere reserve among the general public and decision makers is an important job of biosphere reserve management. To this end, China MAB Committee held the issuing ceremony for Chebaling and Xingkai Lake Biosphere Reserves & the 2008 CBRN Meeting at the People's Great Hall, Beijing in December 2008. The meeting defined "Enter eco-civilization and Implement the Madrid Action Plan" as its theme, elaborated the meaning of eco-civilization and the relationship of biosphere reserves implementing the eco-civilization from different perspectives. In the end, the meeting advocated to implement the Madrid Action Plan from the perspective of eco-civilization.

About 120 participants attended the issuing ceremony, including representatives from CBRN members, teachers and students from middle schools in Beijing, experts from research institutes and universities, policy-makers from government institutions, media and public.

After the meeting, Chebaling Biosphere Reserve formulated a work plan to implement the Madrid Action Plan-The cooperation plan of Chebaling Biosphere Reserve, established the Chebaling Biosphere Reserve United Committee under the leadership of the Director of the County, and publicized its Protection Convention. All these measures have been recognized by local government and local communities, which also involved the participation of experts from research institutions.

UNESCO Beijing Office and China MAB Committee jointly implemented the biogas pilot program. Currently, 10 digesters have been set up and well operated. The local government officials and local residents highly welcome this pilot program and they hope to continuously increase the number of digesters.

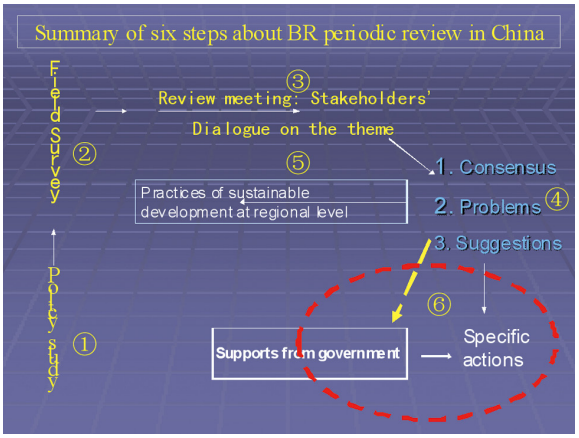
At the end of 2009, Chebaling BR in collaboration with Chebaling Eco-construction Association successfully applied the fund provided by GEF-Small

Grant Programe under the framework of climate change, which has become the seed money for implementing the Chebaling Cooperation Plan. At present, candidates to be nominated as biosphere reserves in 2009 and 2010 include Guangxi Maoershan reserve, Sichuan Tangjiahe reserve, Guangxi Mulun reserve, Shanghai Jiuduansha wetland reserve and Jiangxi Jinggangshan reserve. China MAB Committee has organized a nomination workshop for Guangxi Maoershan reserve, participated by the reserve managers, local residents, local governors and policy makers.

Periodic Review of Biosphere Reserve

Biosphere Reserve Periodic Review is an important job of China MAB Committee. Currently, China MAB takes 6 steps to review biosphere reserve (please see the table below): (1) to organize policy study on the biosphere reserve to be reviewed; (2) field survey taken by the Secretariat of China MAB; (3) to select review experts, organize the field visit participated by all the stakeholders, choose the topic of the dialogue among all the stakeholders and hold the review workshop; (4) to clarify the problems of the biosphere reserve, reach consensus and put forward suggestions; (5) to take practical actions and get the support from government; (6) to promote practices of sustainable development at regional level. On the basis of this 6-step procedure, China MAB Committee will fill out the Biosphere Reserve Review Form and submit the complete official report to UNESCO MAB Secretariat.

The discussion among experts, local residents and reserve managers for conservation and local economic development is an important part of the Periodic Review. The major approach of China MAB Committee to review biosphere reserve is to invite experts from the fields of social and natural sciences, managers, government officials, private sectors, local community and other BR managers to raise the topic for a dialogue on the main problems faced by the biosphere reserve and to organize the dialogue among all stakeholders.



The review process of biosphere reserve strengthened the relationship between biosphere reserve managers and local government officials and promoted the establishment of the partnership among all stakeholders of the biosphere reserve.

According to the above-mentioned steps and approaches, the secretariat of China MAB Committee took the periodic review on the Fenglin Biosphere Reserve in September 2007. The review on Nanji Islands Biosphere Reserve was taken in October 2008 on the topic of "Biodiversity conservation and welfare of local community: How to develop harmoniously?"

In 2009, China MAB organized the periodic review on Jiuzhaigou Biosphere Reserve on the topic of "the Changes of Jiuzhaigou Biosphere Reserve and its sustainability".

Development of the CBRN Network

Up to December 2009, China Biosphere Reserves Network has 136 members in total, among which 28 members are UNESCO World Biosphere Reserves. CBRN introduces and implements the concept of biosphere reserve and it has become the platform of both international and local communication and the base of inter-department cooperation. In the past two years, 22 national nature reserves have joined CBRN network, which shows an apparent increasing trend.

China MAB Committee undertook the policy research on some common issues faced by biosphere reserves. From September to November 2008, under the support of UNESCO Beijing Office, China MAB took the Management Policy Research of Tianmushan Biosphere Reserve. The purpose of this policy research is to investigate the influence of the separation of biosphere reserve's tourism management right and operation right on the conservation function of biosphere reserve, as some biosphere reserve is trying to launch the management system of special licensed tourism. Taking the Tianmushan BR as an example, the policy research is mainly focused on the challenges in the operation process of special licensed tourism, the threats on the conservation of biodiversity and the benefits and appeals of the local communities.

China MAB Committee actively promoted the cooperation with the Center for Earth Observation, Chinese Academy of Sciences. The two parties have identified the priorities for cooperation, organized 5 workshops among biosphere reserve managers and planed to apply the space technology into the biosphere reserve management. Besides the development of CBRN new members, China MAB has

also strengthened its communication with the public through publishing the "Man and Biosphere"

Magazine. China MAB has published 12 issues in the past two years to explore the ultimate topics of the relationship between man and nature. The topics include "Cultural Diversity", "Chebaling", "Xingkai Lake" and so on.
In addition, the Secretariat of China MAB Committee irregularly publishes the "Man and Biosphere Newsletter" to reflect the practical problems of biosphere reserves, to make comments on some special issues from the perspectives of social and natural sciences and to get the suggestions of decision makers. The secretariat has published several issues of the newsletter including "Fengling Biosphere Reserve", "Nanji Island Biosphere Reserve", "Jiuduansha Wetland Nature Reserve" and "Biosphere Reserve as the learning site for sustainable development". The new edition of the CBRN website (www.china-mab.cas.cn) has strengthened the relationship between the secretariat and biosphere reserve managers.

"Man and Biosphere" Magazine and "Man and Biosphere Newsletter" have been sent to CBRN members; government organizations such as National Forestry Administration, State Environmental Protection Administration etc; universities and research institutions, general public, news media and so on.

Country Report - Republic of Korea

Ms. Eun-Young Kim
Secretariat of MAB National Committee of the Republic of Korea
Korean National Commission for UNESCO

Introduction

The MAB National Committee of the Republic of Korea (MAB-ROK) consists of 19 members; Four representatives from central governmental bodies responsible for nature conservation (the Ministry of Environment, the Ministry of Land, Transport and Maritime Affairs, the Korea Forest Service and the Cultural Heritage Administration), two representative from management authorities of biosphere reserves (Jeju Special Self-Governing Provincial Government, management authority of Jeju Island Biosphere Reserve and the Korea National Park Service, management authority of Mt. Sorak Biosphere Reserve), and 13 experts in the fields of ecology, eco-tourism, forestry, environmental law, anthropology, rural sociology, fisheries policy and other related fields. The structure provides a useful forum for exchanging opinions and cultivating cooperation on MAB activities among government officials, as well as between government officials and experts.

The Korean Ministry of Environment, a member of MAB-ROK, began supporting EABRN activities through the Korean National Commission for UNESCO in 1994, one year before the official establishment of EABRN. Since 2000, the Ministry has kindly provided US$35,000 each year to EABRN, and many cooperative activities including regular meetings, joint research, and training workshop for biosphere reserve managers have been implemented within this framework of EABRN Funds-in-Trust.

Activities of MAB-ROK from 2007 to 2009

Nomination and Designation of New Biosphere Reserve: There are three biosphere reserves in the Republic of Korea. Mt. Sorak was established first, in 1982, and 20 years later, the Jeju Island was established in 2002. The Shinan Dadohae was approved as a biosphere reserve at the 21st session of MAB-ICC meeting in Jeju, Republic of Korea in May 2009.

Jeollanamdo Provincial Government believes the biosphere reserve to be a useful instrument to promote local economic development as well as nature conservation. The Jeollanamdo Provincial Government has made efforts to nominate the Shinan Dadohae as a biosphere reserve in close cooperation with the MAB-ROK since 2006, and finally submitted the nomination form to UNESCO through the Korean National Commission for UNESCO in September 2008.

The Shinan Dadohae Biosphere Reserve (SDBR) is composed of five islands and surrounding smaller islands and islets in the southwestern part of the Korean Peninsula. Its total size is 57,312 hectares; with a terrestrial area of 14,496ha and marine territory occupying 39,138 ha. SDBR also has large tidal flats, which amounts to 3,678 ha. The tidal flat in Jeollanamdo is an especially fertile habitat for fish, saltwater plants, and algae from which the local community benefits. It also serve as resting places for rare and endangered migratory birds such as black-faced spoonbill, Chinese egret, and oyster catcher, which are designated as natural monuments by the government.

Traditional activities such as hand-fishing and sun-dried salt production are still practiced, and we expect that by preserving and promoting these activities, we can improve local economy and achieve sustainable development.

There is another Korean candidate for becoming a biosphere reserve: In September 2009, the nomination form for the Gwangneung Forest was submitted to UNESCO, proposed by the Korea National Arboretum and the Gyeonggi Provincial Government. Gwangneung Forest is located in the central part of the Korean peninsula where the extreme continental climate of northeast Asia and the oceanic climate of the Pacific meet. It has been strictly preserved since 1468 as the adjoining forest of the royal tomb of King Sejo, the seventh King of the Joseon Dynasty. "Gwangneung" is the name of the royal tombs of King Sejo and his wife Queen Jeonghui. The tomb and its surrounding forest were inscribed on the list of World Heritage in June 2009 as the Royal Tombs of the Joseon Dynasty, together with 39 other royal tombs in the Republic of Korea.

Gwangneung Forest is composed of deciduous hardwood natural forests and mainly covered with an old-growth forest of the central temperate zone in the Republic of Korea, with large numbers of hornbeam, which are presumed to be a climax species, oaks, dogwood, and others. A white-bellied woodpecker, a rare bird worldwide, was recorded to live here and Korean long-horned beetle is only found in this area in the Republic of Korea. The beetle is the only insect species which was protected as a natural monument of the Republic of Korea.

This area functions as an eco-corridor to the Demilitarized Zone (DMZ), which lies approximately 40 km to the north of Gwangneung Forest. DMZ has well-protected ecosystems and is an ecological axis, running from east to west of the Korean Peninsula. Therefore, designation of Gwangneung Forest as a biosphere reserve will contribute to the conservation of biodiversity without fragmenting the ecosystem.

Capacity-building: There was an Expert Workshop for Establishing a Management Plan of the Shinan Dadohae Biosphere Reserve (SDBR) on 23~ 24 October 2009. 50 participants from biosphere reserves, MAB National Committee, local governments, universities, and NGOs reviewed current conditions of Korean biosphere reserves and discussed the direction of management plan for SDBR. A representative from the Mt. Sorak Biosphere Reserve (BR) made a presentation on the current situation and challenges facing the Mt. Sorak BR. According to the presentation, as a national park, scientific nature conservation is realized in Mt. Sorak and ecotourism has been encouraged to improve the local economy. Environmental education programmes and visitor's programmes have been developed by the Korea National Park Service, and volunteer training and learning programmes for local people are carried out as well. However, it was pointed out that since the size of transition area is only 1.37% of total area, the transition area of Mt. Sorak BR should be increased to duly implement the three functions of biosphere reserve. Another challenge is to increase the involvement of local government and community in biosphere reserve management.

Then, all participants discussed future direction of SDBR management plan to achieve sustainable development and to improve quality of life through conservation of biodiversity and natural resources. Ecotourism and BRIM (biosphere reserve integrated monitoring) were emphasized.

MAB-ROK Operation: Regulation of MAB-ROK was revised in October 2008 and again in March 2009. The main points of these revisions were to encourage MAB activities in the Republic of Korea and to improve commitment of central government. The number of chair people of MAB-ROK was increased from one to two people; one expert and the other from government. And the total number of members was also increased, from 15 to 20, and many experts from diverse disciplines joined MAB-ROK. The 13th Committee of MAB-ROK was established with 19 members. Its term is from November 2008 to October 2010.

Regular meetings were organized for MAB-ROK. At the meeting in September 2008, MAB-ROK members reviewed the nomination form of the Shinan Dadohae to submit it to UNESCO and discussed plans for 2009.

In March 2009, new members of the 13th Committee gathered for the first time to be informed of history

and activities of MAB-ROK. They also elected co-chairs (Dr. Choi Chung-Il, adjunct professor, Hanyang University and Director-General, Bureau of Nature Conservation, the Ministry of Environment) and vice chair (Prof. Kim Kwi-Gon, Seoul National University) of MAB-ROK and discussed plan to organize the 21st MAB-ICC.

In September 2009, there was the second meeting where MAB-ROK members reviewed the nomination form of the Gwangneung Forest and decided to submit it to UNESCO. At this meeting, members discussed method to encourage MAB activities in the Republic of Korea and made the decision to transfer the secretariat of MAB-ROK to the Korea National Park Service, according to the official order of the Ministry of Environment, which is under preparation.

Since, as a national park management authority, the Korea National Park Service has experience to conserve national park resources and to promote their sustainable use, MAB-ROK is expected to promote MAB activities in Korea with expertise of the Korea National Park Service. The Korean National Commission for UNESCO has been in charge of the secretariat for 30 years; and from now on, it will concentrate on regional and international cooperation and develop joint project.

Publication and Policy Study: A research project on Mt. Baekdu was organized by the Korean National Commission for UNESCO with the support of Northeast Asian History Foundation in Korea in 2007. It aimed to facilitate regional cooperation for conservation of Mt. Baekdu. Prof. Cho Do-Soon, a member of MAB-ROK, led the project team, which was composed of experts on ecology, taxonomy, and geology. They indexed existing studies on vegetation, flora, fauna and geology of Mt. Baekdu and published an "Inventory and Review of Nature Research on Mt. Baekdu" in Korean in December 2008.

MAB-ROK organized a forum on the DMZ on 27 October 2009, in cooperation with the Korean National Commission for UNESCO. It aims to support government action on the DMZ area, and to suggest principles and guidance for the DMZ biosphere reserve. Participants from MAB-ROK, central and local government, research institutes, and NGOs got together to share the policy and activities of central and local governments, to review current law and regulations, and to discussed principles and challenges to designate the DMZ as a biosphere reserve.

Regional Cooperation through EABRN: The Ministry of Environment has provided funds for EABRN activities for about 15 years and contributed to strengthen regional cooperation through biosphere reserves. For last 15 years, regular meetings and training workshops were organized and joint research project and EABRN atlas were developed and published. At this juncture, review and evaluation of the output and challenges of EABRN is needed, along with future plans. In addition, within the framework of EABRN, the Ministry of Environment, through the Korean National Commission for UNESCO, provided voluntary funding for project of MAB-DPRK in early 2008 such as the publication of the "Inventory and Impact Assessment of Alien Plants in DPR Korea" in September 2009 in Korean and English.

International Cooperation: At the 21s session of MAB-ICC at the Jeju Island Biosphere Reserve in May 2009, a Global Network of Island and Coastal Biosphere Reserves was proposed by Spain and the Republic of Korea and was approved unanimously by the MAB-ICC. It will contribute to action on climate change and sustainable development among island and coastal biosphere reserves. The action plan will be made early next year and participation of EABRN members to this new network is more than welcome.

Following a suggestion at the EABRN-9 Meeting in 2005, the Government of Jeju Special Self-Governing Province, which is responsible for Jeju Island Biosphere Reserve, began a 6-year Funds-in-Trust project entitled Jeju Initiative: Asia-Pacific Inter-linkage of Island and Coastal Biosphere Reserves for Environmental

Governance and Socio-Economic Development ("Jeju Initiative") in 2006, providing US$50,000 each year to UNESCO. Within the framework of Jeju Initiative, two meetings were organized in cooperation with the UNESCO Jakarta Office. In December 2008, an International Conference of Island and Coastal BR on Climate Change and Coastal/Island Ecosystems was held in Jeju Island, and managers and researchers of biosphere reserves from Asia and the Pacific region, in addition to Spain, South Africa, Colombia, participated and shared their experiences responding and adapting to climate change. An International Workshop on Climate Change in Biosphere Reserves was held concurrently during the 21st session of MAB-ICC.

Country Report - Russian Federation

Valery M. Neronov
Vice-President of ICC MAB/UNESCO,
Deputy Chair of Russian MAB Committee

After the 10th EABRN meeting held in September 2007 in Terelj National Park (Mongolia) we organized Russian scientific practical conference (Khanty-Mansiisk, October 2007) "Biosphere reserves of Russia in 21st century". Representatives of the most of biosphere reserves took part in this conference and it gave a possibility to elaborate detailed and constructive recommendations including the statement for Madrid Congress on biosphere reserves. In this Congress the Russian delegation was one of the most numerous. After the Congress we started a work with each individual biosphere reserve how to implement the Madrid Action Plan.

Between two meetings of EABRN the Russian MAB Committee, as well as in former years, had regular contacts with Commission of Russian Federation for UNESCO, Secretariat of MAB/UNESCO, regional offices of UNESCO (Beijing, Moscow, Tehran) and MAB national committees in a number of the countries. Our main achievement in this period was an inclusion of the Altaiskiy reserve (Supplement 1) into the World Network of Biosphere Reserves approved at the 21st Session of ICC MAB (Jeju Island, Republic of Korea, May, 2009). It means that now in the Asian part of Russia, included into EABRN, we have 16 biosphere reserves and we hope that this number will be increased in near future. In total up to now we have 39 biosphere reserves in Russia. For better implementing Madrid Action Plan we are trying to establish direct contacts with administrations of Russian Federation subjects. It was a positive experience with Republic of Tatarstan, Rostov region and after that with Republic of Altai. In summer 2009 under the invitation of the regional branch of the Commission of Russian Federation for UNESCO in the Republic Yakutia-Sakha there was organized a trip to Yakutia and during which it was possible to survey some territories and analyze available materials for several candidates for biosphere reserves (Ust-Lenskiy, Olekmisnkiy and Lena Pillars). Some more candidates are under consideration in North and South parts of Far East but all these initiatives are needed serious support from the Ministry of Natural Resources and Ecology.

The summer of 2009 was very busy for our Committee since we took part in preparing and conducting of special section for strengthening international cooperation for saiga conservation within the XXIX International congress of game biologists (Moscow, August 2009). After this Congress following to the initiative of Commission of Russian Federation for UNESCO our Committee took part in preparing and conducting the ecological section within the International congress of UNESCO chairs involved into education programs for sustainable development (Khanty-Mansiisk, September 2009). At this Congress with participation of UNESCO chairs from different countries it was possible to elaborate many useful recommendations and particularly on strong links between UNESCO chairs and biosphere reserves for implementing UN Decade on Education for Sustainable Development (Supplement 2).

At the above mentioned 21st Session of ICC MAB made two more important for our Committee decisions: Dr. Marina Rubtsova, young researcher from Centralnosibirskiy biosphere reserve has been approved among winners of MAB Young Scientists Award and Dr. Yury Gorshkov, Director of Great Volzhsko-Kamskiy biosphere reserve (at the European part of Russia) has received a Michel Batisse prize for biosphere reserve's management (together with Dr. B. Salem from Egypt).

To evaluate the main successes, obstacles and gaps in implementing the Seville Strategy and Madrid Action Plan in Russian biosphere reserves in 2009 we had to translate the Questionnaire received from MAB/ UNESCO Secretariat into Russian and distribute both versions (English and Russian) among managers of

all our 39 biosphere reserves. It was very useful experience but it took a lot of time to prepare a synthesis of all answers, translate them into English and re-transmit numerous files back to Paris. Anyhow our work was approved when MAB Secretariat presented the analysis of this questionnaire survey at the 21st Session of ICC MAB.

Besides this activity we conducted a survey of all biosphere reserves with a task to receive their suggestions how to improve the national and regional legal systems and laws to guarantee the best functioning of biosphere reserves, particularly in conducting necessary experiments and ecological monitoring, educational programs within buffer and cooperation zones. Such proposals have been submitted to the State Duma (Russian Parliament) and to the Ministry of Natural Resources and Ecology for including into the list of amendments of the Federal law (1995) on Protected Areas. We hope that our proposals will be accepted and after that it will be much easier to integrate all functions of biosphere reserves and their involvement into sustainable development of adjacent territories. In this endeavour we believe it will be very useful to have a wide exchange of data and experience among members of EABRN.

For the further optimization of our national network and improving the functions of each biosphere reserve, as it was recommended by the Seville Strategy and according to the Madrid Action Plan, we prepared with a help of Moscow UNESCO Office a draft of Strategy of biosphere reserves network development in Russia up to 2020. It was discussed at several workshops and distributed among managers of all 39 biosphere reserves (together with Seville Strategy and Madrid Action Plan translated into Russian) for corrections and amendments. Now we are expecting the endorsement of this Strategy by the relevant Russian authorities. Some biosphere reserves prepared their own strategies for proper management and integration of the biosphere reserves functions and for attracting funds from business and NGOs to implement such activities. It is important for promoting activities of biosphere reserves that many of them have their own websites and also they use websites of Moscow UNESCO Office, Biodiversity Conservation Center and Institute of Ecology and Evolution of RAS.

Following to the recommendations of the Convention on Biological Diversity (CBD) we prepared another Questionnaire and set of relevant materials on the ecosystem approach to conservation of biodiversity and on impacts of alien invasive mammal species on native biota and protected ecosystems. These materials have been distributed among biosphere reserves, some additional explanations have been made at several workshops and symposia. As a result of our efforts we have several scientific papers on ecosystem services' assessment in biosphere reserves with recommendations to local administrations how to apply the ecosystem approach to guarantee the biodiversity conservation and improvement of the whole management of biological resources. For alien invasive species we published an informative book in Russian describing what is going on in our biosphere reserve and what will be necessary to do to prevent negative impact in near future. This information is also available at the website www.sevin.ru of our Institute of Ecology and Evolution, Russian Academy of Sciences, Moscow. Next year we will have one more international meeting on biological invasions to be held not far from Moscow.

As it was stated at several EABRN meetings, among the priorities of the Russian MAB Committee we included creating of the transboundary biosphere reserves and improving their cooperation. During 2007 - 2009 we had several direct negotiations with our colleagues from MAB Committees of China, Mongolia and Kazakhstan. Last country at the 35 session of General Conference of UNESCO for the first time was elected into ICC MAB and it is keen to become a member of EABRN, but up to now they haven't any biosphere reserves. Relevant proposals on nomination of transboundary biosphere reserves (first of all, in the Ubsu-nur depression which is already a transboundary World Heritage Natural site) have been submitted to the Ministry of Natural Resources and Ecology of the Russian Federation and the Commission of the Russian Federation for UNESCO and will be considered at the intergovernmental commissions for cooperation in environmental

protection. Since at both sides of the above mentioned joint frontier of Russia with its neighbors there are some biosphere reserves we hope that very soon all the necessary documents for transboundary biosphere reserves nomination will be ready and submitted to UNESCO/MAB Secretariat. Creating such transboundary biosphere reserves by all means will improve a conservation of biodiversity, particularly rare and endangered migrating species and cooperation in all joint actions. It will be remarkable input into implementing the Madrid Action Plan. We expect a help in this endeavor from our neighbors. In separate presentation prepared for EABRN-11 by Drs. Olga and Vadim Kirilyuk from Daurskiy biosphere reserve it is shown what kind of difficulties is necessary to overtake and what compromise to be achieved for completing this task.

At the previous two meetings of EABRN we discussed in details the importance of creating a transboundary reserve for protection of Amur tiger and Far East leopard at the base of Russian biosphere reserve "Kedrovaya Pad" and Chinese Hunchun Natural Reserve. It is pity but up to now we didn't see any progress in implementing this initiative. It was supported by Ministry of Natural Resources and Ecology of Russian Federation which created large sanctuary "Leopardovyi" and attached it to "Kedrovay Pad" (this biosphere reserve was transferred from Far East Branch of Russian Academy of Sciences to the Ministry of Natural Resources and Ecology of Russian Federation in 2009).

As in previous years Russian MAB committee continued its efforts to use various mass media (the newspaper "Zapovednoe brotherhood", the Bulletin of the Commission of Russian Federation for UNESCO, magazines "Ecology and Life" and "Protected areas' affairs", TV) for expansion of knowledge of general public about the importance of biosphere reserves for biodiversity conservation and sustainable development. These efforts have been approved at the International congress of UNESCO Chairs (Khanty-Mansiisk, September 2009).

Just before this EABRN meeting there was held a similar meeting of EuroMAB-2009 in Slovakia Stara Lesna, October 27-30, 2009), in which delegates from 22 countries (including Russia) took part. For next two years EuroMAB will concentrate on improving the communication among its members and numerous biosphere reserves at the territory of this large region of UNESCO. The special web-platform with help of UNESCO/MAB Secretariat will be created and for further improvement of coordination of all activities and proper preparing the next EuroMAB meeting (in Sweden in 2011) a coordinating committee was established (members of this committee are representatives of countries organized EuroMAB conferences in 2007 (Turkey), in 2009 (Slovakia) and Sweden, Canada and Russia. May be, it will be useful to follow to this new development in EuroMAB and create a similar coordinating body to guarantee implementing the approved priorities in EABRN, as well. To one more activity started in the EuroMAB I would like to call attention of participants of EABRN-2009 meeting. In the beginning of March, 2009 in biosphere reserve "Pays de Fontainebleu" (France) the international course on development of methods of work with the stakeholders (interested organizations and separate partners) on maintenance of functions of biosphere reserves (the so-called technique - ARDI offered by the French researchers) has been organized. The exchange of opinions and approbation of these methods with participation of representatives of Austria, Belarus, Bulgaria, Canada, Slovenia, Turkey, France, Croatia, and Russia took place. During approbation with use of data from biosphere reserve "Pays de Fontainebleu" priorities have been specified, some block-diagrams have been made and optimum communications between the different interested organizations and separate partners are planned. This technique should help in elimination of the difficulties arising in biosphere reserves at performance of some activities described in the Madrid Action Plan. The description of the given technique has been presented at EuroMAB-2009 conference and the decision on expansion of its use in the different countries was accepted. For mastering by this technique the MAB/UNESCO Secretariat together with MAB Committee of France should prepare a necessary manual. I believe it could be useful for EABRN countries and after publishing this manual it will be necessary to translate it for direct use in different biosphere reserves of six country-members of EABRN.

In conclusion I wish to assure EABRN participants that in plans of Russian MAB committee for 2010 there are additional actions for implementing all tasks facing us after the 21st session of ICC MAB. In 2010 we have also to work together with other members of EABRN and use properly all opportunities to improve biodiversity conservation and it will be our joint input into the International Year of Biodiversity proposed by the UN General Assembly. Within EABRN region two important meetings devoted to this International Year will be held in Mongolia in September 2010: the 40-years jubilee conference of the Joint Russian-Mongolian Biological Expedition and the International conference “Steppes of Eurasia under impact of global climate change” initiated by Commission of IUCN for ecosystem management.

SUPPLEMENT 1:
SUPPLEMENT 2:

COUNTRY – RUSSIAN FEDERATION
NAME OF BIOSPHERE RESERVE – ALTAISKY

Declaration date: 2009

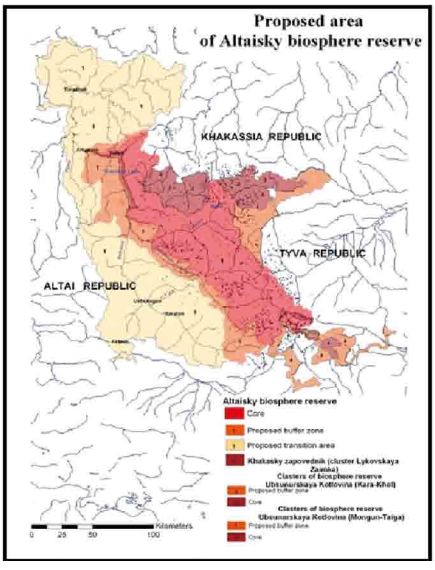
Surface area: Total **3532234** ha
Core areas: 881236 ha
Buffer zones: 962800 ha
Transition areas: 1688198 ha

Administrative division: Altai Republic

Human activities:
- noncontrollable tourism;
- poaching of fish, birds and mammals;
- threat of forest fires.

Protection classifications: State nature reserve (Zapovednik)

Ecological characteristics: The proposed biosphere reserve Altaisky is located on the area of the North-Eastern and Eastern Altai. The Altaisky reserve is the largest lake country in Altai-Sayan region. 2560 medium and small lakes are located in its area, the largest of which is the Teletskoye Lake. The most part of water area of the Teletskoye Lake is included into a core area of the Altaisky reserve, the rest of area is a buffer (protected) zone. The core area of the proposed BR is a State nature reserve "Altaisky" - a federal strictly protected nature area representing a unique mountain country consisting of a system of mountain ranges. The relief is characterized by variety of forms: high-mountainous alpine zones are replaced by plateau like uplands, wide valleys and deep canyons, and has different elevations ranging from 400m up to 3500m above sea level. Based on the quantity of vascular plant species the Altaisky reserve takes the second place in Russia after the Caucasus biosphere reserve; by a species variety – within the five of the Russian reserves. Today there are more than 3101 kinds of plant species in the reserve area. From total number of plants more than 250 species belong to the Altai-Sayan endemics, 120 species - relicts of various epochs of the Palaeogene-Neogene and Quaternary periods. Since the Altaisky reserve have been established 16 fish species, 2 species of amphibians, 6 species of reptiles, 326 bird species, and 70 mammal species have been found. Now the fauna of mammals of the Altaisky reserve has been counted to have 70 species belonging to 6 groups, and 14 families including: predators - 15, artiodactyls - 8, rodents - 24, hares - 2, chiropters - 8, insectivorous – 11. From 326 bird species in the Red Data Book of Russia are included 35 species.



Contact information:
State nature reserve
«Altaisky», prospect
Communistichesky-1,
Gorno-Altaisk, Altai Republic
Russia 649000
Tel./fax: (388-22) 6-69-47
E-mail: agpzmain@rambler.ru
http://www.altzapovednik.ru

Declaration ofInternational Congress of UNESCO Chairs on Education for Sustainable Development

(Khanty-Mansiysk Declaration)
September 17-19, 2009
Khanty-Mansiysk, Russian Federation

Participants of the International Congress of UNESCO Chairs on Education for Sustainable Development (ESD) held in Khanty-Mansiysk (Russian Federation) on 17-19 September 2009

- Taking into account the principles of the UN Decade on Education for Sustainable Development (2005-2014) and recognizing their social, cultural, ecological and economic importance;
- Following up on recommendations of the UNESCO World Conference on Education for Sustainable Development (Bonn, Germany, 31 March – 2 April 2009), World Conference on Higher Education (Paris, France on 5 – 8 July 2009), UNESCO 48th session of the International Conference on Education "Inclusive Education: the Way of the Future" (Geneva, Switzerland, 25-28 November 2008) and following the decision of 182nd session of the UNESCO Executive Board (182 EX/8);
- Recognizing that ESD is based on such human values as humanism, justice, responsibility, credibility and encourages harmonization of relationships between humans and nature, development of gender equality, social consolidation, poverty reduction, and convergence between developed and developing countries;
- Confirming that sustainable development involves peaceful future, universal respect for human rights, and continuing concern for the environment;
- Considering that philosophical, scientific, cultural, and ecological components, targeted to sustain high living standards in all regions of the world, form a basis for education for sustainable development;
- Convinced in the necessity of consolidation of efforts of universities, UNESCO Chairs and UNESCO/ UNITWIN networks that serves as important modalities to achieve DESD goals

Call for actions and request:

UNESCO

- Create on the basis of the intersectoral platform for ESD the Internet-portal for placing educational and methodological materials on ESD issues, ESD strategies and action plans of UNESCO member-states, and qualitative indicators of their implementation;
- Form an ESD expert group, which is to include Heads of UNESCO Chairs, and leading scientists and educators, which represent all regional groups;
- Support the establishment and development of international networks of UNESCO Chairs related to different aspects of the education for sustainable development.

At international level:

- Support academic mobility and practice and programme exchange in the framework of UNESCO/ UNITWIN network;
- Assist all countries, in particular, developing countries and countries in transition, in development of methods for interdisciplinary research for incorporating education for the sustainable development into educational programmes;
- Promote ESD through coordinated inter-sectoral/inter-ministerial approaches involving large social partnership, participation of state authorities, business, institutions of civil society and scientific community;
- Support the development of existing international, regional and national cooperative mechanisms of ESD focused on protection of cultural diversity;
- Foster constructive dialogue for ESD policy development applying data from relevant research, monitoring

and evaluation strategies, promote recognition and exchange of accumulated experience and good practices;
- Promote the proclamation of 2011 as the Teacher's Year, which should be stated as the UNESCO memorable date, based on the UNESCO's experience with 5 October as the Teacher's Day and experience of the Russian Federation having 2010 as the Teacher's Year, and facilitate work of international society with regard to this event.

At national level:

- Develop harmonized indicators to measure the effectiveness of ESD implementation;
- Support an introduction of innovative information and communication technologies for ESD by creating conditions for improving and modernizing recourses of UNESCO Chairs and establishing cooperation with universities from other countries;
- Encourage introduction of ESD throughout all phases of education;
- Promote activities in the sphere of additional and non-formal education for supporting training of qualified ESD educators through organization of courses, summer schools, competitions, development of distance education;
- Assist in increase of youth involvement in ESD development and implementation; to utilize potential, solidarity and dedication of youth organizations in enhancement of ESD; to support young people to solve independently different issues and problems of ESD;
- Strengthen a familiarization with and understanding of sustainable development issues among a wide society through education and mass media.

The participants of the Congress express hope that the held discussions will attract wide public attention and receive international responses from public, politicians, ESD experts and scientists, and will contribute to confirmation of values, required for harmonized and sustainable development of the modern society.

The participants of the International Congress of UNESCO Chairs on Education for Sustainable Development express appreciation to the Government of the Khanty-Mansiysk Autonomous Okrug – Ugra, Commission of the Russian Federation for UNESCO, UNESCO Moscow Office, Coordination Committee of UNESCO Chairs in the Russian Federation for organization of the Congress, and to the Intergovernmental Foundation for Educational, Scientific and Cultural Cooperation.

In addition the participants of the Congress adopted resolutions of three round-tables (on education, environment and social aspects of sustainable development), which were held in the framework of the Congress.

Summary document of the round table entitled Activities of UNESCO Chairs on Education for Sustainable Development in Modern Society

The round table titled "Activities of UNESCO Chairs on Education for Sustainable Development in Modern Society» was held on 18 September 2009 in coordination with the International Congress of UNESCO Chairs on Education for Sustainable Development (ESD). The participants of the round table pointed out the UNESCO Chairs considerable contribution into molding education policy at regional and national levels for the achievement of the UN Decade ESD goals. During the assembly process of the International Congress of UNESCO Chairs on Education for Sustainable Development it was confirmed that education is as an effective tool of asserting human values and molding a spiritually grounded individual and solid moral climate in the situation of globalization, the growth of immigration and the worsening of social inclusion problems, and that it should hold an essential responsibility in developing a long-term program for sustainable

development in a consumer-oriented society. The researching into the effects of global, regional and national challenges in the development of education system demonstrates the growth of humanitarian mission of educational institutes and the role of the UNESCO Chairs network cooperation in implementing the ideas of sustainable development of society within the long-term outlook. Among the programs of the UNESCO ESD Chairs are the tasks of interdisciplinary research, the interdependence of cultural and educational traditions, socio-economic development and the ecology of environment for sustainable development. Also included are the training for the new kind of specialists able to respond to the challenges of time and work in conditions of a crisis, and the development and implementation of humanitarian and informational technologies for network cooperation in pursuit of sustainable development.

The expansion of cooperation among the UNESCO ESD Chairs makes it possible to promote new mechanisms of network interaction in different countries, to develop and realize the joint long-term programs of activities and the communities of practice based on the cross-sectoral platforms, and to disseminate the positive experience of implementing innovative technologies in the sphere of education as the requirements for sustainable development.

The following decisions have been adopted after discussing the reports and statements of the roundtable participants: request UNESCO to designate the year 2012 as "Year of the Teacher", and to plan events of celebration for it as such, based upon the experience of the UNESCO commemoration day, October 5th (Teacher's Day), as well as the experience of commemoration the year 2010, Year of the Teacher, in Russia.

- actively pursue creative potential of scholars and professors working in network cooperation among the UNESCO ESD Chairs to realize the role of education as foundation of civil society, working to develop spiritual guidance in education policy, in order to achieve sustainable development on national as well as regional levels.
- conduct series of research, as assurance of continual interdisciplinary humanitarian expertise, into the role of educational value aspects in the formation of a spiritually-grounded and culturally-aware individual as a requirement for sustainable development;

- build and implement educational programs for the advanced training and retraining of qualified teachers on different levels and social workers concerned with inclusive education and tutor support in various segments of population, in a polycultural climate;

- stimulate various structures of civil society in developing programs aimed at support of the family on socio-pedagogical and psychological levels, as the foundation of socialization and formation of individual's civil identity;

- develop partnership ties via joint and academic staff exchange programs and coordination of student's mobility in order to strengthen the interaction and cooperation among UNESCO Chairs (ESD);

- support the conservation of national languages of smaller peoples, the development of cultural and educational traditions in globalization environment by the ways of the cooperation with government structures and the foundation of centers dealing with the humanitarian expertise of the role of education in the sustainable development, within the framework of UNESCO Chairs network cooperation;

- encourage the conducting of interdisciplinary research in universities and support academic staff in developing the methods of such research aimed at identifying qualitative methods for the available-for-all education;

- facilitate infiltration of ICT in the sphere of education for sustainable development by creating the conditions for improving and upgrading one's own resources and establishing relations between UNESCO Chairs based on cross-sectoral platforms.

In order to fulfill these recommendations the participants of the conference hereby solicit UNESCO for the support of the UNESCO Chairs project aimed at identifying the mechanisms of network cooperation linked by regional principles, among the Chairs with goals of pursuit of sustainable development. This project was initiated by Herzen State Pedagogical University of Russia.

The participants expressed gratitude to the organizers of the international congress for the given opportunity to take part in the dialog of the UNESCO ESD Chairs. We consider the Congress in Khanty-Mansiysk as an important step of the international community towards the radical solving of the problems of sustainable development able to become a wide road to the future of our civilization.

International Congress of UNSECO Educational Chairs for Sustainable Development Issues

Round-table discussion: the activity of the UNESCO chairs on social issues for sustainable development. September 18, 2009

Ideas of the round table discussion: the discussion of structure, content and organization measures to intensify the network cooperation of the UNESCO chairs for the sustainable development of regional and international social and economical systems and solving the key social problems; making the list of the innovative initiatives in the social sphere; studying the UNESCO chairs experience in educational activity for sustainable development in social sphere; forming the special level of uniform information space and information culture of the population, social networks - the basis for the development of transcultural communicativeness and intercultural dialogue; the culture of responsible product and service consumption as a basis of high life quality of future generations; relevancy of informative inequality liquidation for strengthening the unity of society and education; searching for the innovative ways of the popularization of sustainable development ideas in mass media.

The Chairman of the meeting: Professor Aleksandr Pavlovich Lunev, Rector of Astrakhan State University, Head of the UNESCO Chair "Learning Society and Social Sustainable Development", Doctor of Economics.

Report of A.P. Lunev, the Chairman of the meeting, on the topic: "Information Culture of the Population is a Basis of Social Sustainable Development"

Issues for discussion:

- forming the special level of uniform information space and information culture of the population, social networks - the basis for the development of social sustainable development of the society

- forming humane and tolerant social sphere through studying foreign languages and social informal supplementary education

- the cooperation of the UNESCO chairs in creation of the network of the transfer of social initiatives and projects for sustainable development of regions and information culture formation of the population
- the consolidation of the UNESCO chairs activity in the development of the culture of sustainable

consumption through the consumption networks, specifying the specific features of socially responsible consumer and the patterns of sustainable consumption with the low level of negative influence on the environment

- the cooperation of the UNESCO chairs with the organizations and the enterprises, aiming at reducing energy consumption in the manufacturing the products and environmental pollution, working out and implementing the innovative technologies of clean production

- What key social problem/unstable factor of your country/region can be stated for its solving in the network of social initiatives and projects transfer?
- What important social initiatives and projects in your country/ region can be presented to the network of the transfer of social initiatives and projects to share the experience?

- the proposals of the UNESCO chairs on the joint elaboration of the interdisciplinary academic courses of supplementary education in the sphere of sustainable consumption, information culture for different target groups of course participants

- What new technologies, information and media resources should be developed for efficient informal life long education of the population?

- the UNESCO chairs' proposals on the creation of international interdisciplinary student teams to carry out marketing and social researches, aimed at the revealing positive and negative factors, having influence on the formation of information culture of the population and sustainable consumption.

The protocol of round table meeting on the Activity of the UNESCO Chairs on Social Issues for Sustainable Development

On September 17 – 18, 2009 the round table meeting "The Activity of the UNESCO Chairs on Social Issues for Sustainable Development" was held within the framework of the international congress of the UNESCO chairs, dealing with sustainable development.

The representatives of the UNESCO chairs, interested in the studying the social aspects of sustainable development of modern society, took part in the round table session of the congress.

Having listened to the speakers and having discussed the reports of the representatives of the UNESCO chairs on social issues and sustainable development, the participants of the round table session emphasize:

- the topicality of D.A. Medvedev, the President Of Russian Federation's initiatives on social, economic and political development of Russia, pointed out in the Article "Set forward, Russia" and other speeches of the President

- the need for a common standard in the field of education and sustainable development, including the recommendations on defining the levels of difficulty and professional competence. The need for the skills of responsible decision making in social and cultural sphere and for teaching to implement these decisions on practice. It is possible by means of using imitational models and games.

- the need for the promotion of consumption culture among people for sustainable social and economical development of countries and regions, consulting the consumers in the area of environmental, social and economic consequences of their preferences and actions

- the need for the elaboration of methodological bases for sustainable production, food and energy consumption, the integration of the issues of environmental protection and the strategy of the developing the key economic clusters of a state or a region.

- the need to search new ways of updating young people to promote the culture of healthy lifestyle and to prevent such socially dangerous diseases as alcohol addiction, drug addiction and smoking.

- the formation of the information culture of the population and the liquidation of informative inequality is the most important challenge of a global information society. Thus the actual educational problem of the UNESCO chairs is an education of the citizens, engrafting the readiness for transnational communications and intercultural dialogue in social and consumer networks.

- the increasing need for different types of informal supplementary education, which lets quickly and efficiently meet constantly changing social and cultural and educational needs of a person, develop the motivation for learning, develop the information culture both of a person and a society as a whole.

The UNESCO chairs, studying the social aspects of the sustainable development of a modern society, include into their programs the organization and carrying out of interdisciplinary and multidisciplinary educational courses for different target groups, widely apply the technologies of on-line education for the organization of informal supplementary education of the population, carry out the researches of social issues of the development of a global information society and sustainable production and consumption.

For the extension and intensification of the cooperation of the UNESCO Chairs on social issues for sustainable development it's necessary:

- to use more widely the new facilities of a global information society in the establishing of international social networks for the exchange of knowledge, initiatives and projects

- to develop the cooperation of scientists for joint elaboration of interdisciplinary academic and educational courses, training guides and books, carrying out the researches for the sustainable development of regions, forming the information culture of the population, the liquidation of information and economic inequality

- to make international student teams for conducting new social projects, researches, which will allow to train the specialists of new level, having not only professional skills, but also being able to conduct intercultural dialogue, be tolerant to other ethnics and cultures.

On the basis of the discussion of the reports and the presentations the following recommendations were offered for their including into the protocol with the decisions of the Congress of the UNESCO chairs:

1). establishing the international network of transfer of social initiatives and projects for gathering, analysis, estimation and the exchange of social initiatives and projects, the formation of information culture of the population to activate the network interaction of the UNESCO chairs in solving the social problems for sustainable development of the society

2) creating of united virtual platform for the Russian UNESCO chairs to present major elements of material and cultural heritage of RF regions and to form virtual space of material culture of the regions, to preserve and develop cultural diversity of Russia, to extend access to the regional and local culture for the population of Russia and world society as a whole.

3) paying special attention to the developing the joint academic and educational programs, carrying out the joint interdisciplinary researches by the UNESCO chairs, aimed at the liquidation of information inequality of the population in different regions/countries

4). considering the promotion of consumption culture among the people for reducing the negative influence on a human and the environment, decreasing energy and resources as one of the top tasks of the UNESCO chairs

5) considering working out the programs aimed at prevention of socially dangerous diseases(drug-addiction, alcohol addiction smoking, etc.) by UNESCO chairs as necessity

6) supporting the conceptual ideas and proposals by D.A. Medvedev on modernization of state and society, based on the paradigm of sustainable development

7) proposing to create standart in the sphere of education for sustainable development

8) Using such new teaching techniques as imitational modeling and business role-play to form practical skills of decision making in the social and cultural spheres

9) contributing in every possible way to the preservation of cultural and natural heritage for the sustainable development of a region/country, to plan and coordinate the UNESCO chairs' researches in the field of protection and sustainable usage of cultural and natural heritage. Paying more attention to the international and regional cooperation in the sphere of tourism as to a mechanism of sustainable development.

10) developing the partner communication and mechanisms of the UNESCO chairs' interaction in the sphere of social issues of sustainable development of the society through the organization of the academic mobility of teachers and students, the working out joint interdisciplinary and multidisciplinary researches and projects

11) rendering the assistance especially to developing countries and transition countries in the liquidation of information inequality and the formation of the sustainable consumption culture

12) improving the quality of academic programs and courses, developed by the UNESCO chairs, for the developing socially responsibility of the citizens and the liquidation of information inequality

13) organizing the large international conference "At the Crossroads of Great Civilizations: the Preservation of Cultural and Historical Heritage of the Lower Volga region for the Sustainable Development of the Region" in September 2010 in Astrakhan

14) organizing the international scientific and practical conference under the auspices of UNESCO "Electronic Culture – XXIst Century" in October 2011 in Astrakhan.

For the implementation of the above mentioned recommendations the participants of the session ask to support the following initiatives:

Project 1: "The International Network of the Transfer of Social Initiatives and Projects for Sustainable Development of Regions and the Formation of Information Culture of the Population"
Project 2: "The International Cooperation of the UNESCO Chairs for the Development of Sustainable Consumption through Consumer Networks"
3. To support the development of the project "Transit-R" PSENMCS (Korolev) for the creation of the

international low-orbit info trunk of the Russian universities and the UNITWIN (the UNESKO near-earth satellite) in the near-term and medium-term perspective.
4. To hold in March 2010 the international technical-scientific conference "The regions for the sustainable development of Russia" under the sponsorship of the UNESKO department of Novosibirsk State University "The sustainable development of the environmental sciences and social problems".
5. To hold in April 2010 the contest for the schoolchildren "More information for the strong nation" on the basis of UNESKO department "The healthy life-style is the guaranty of the successful development" of the Moscow State Medical and Stomatological University.
6. To hold in November 2010 the conference under the UNESKO sponsorship "Russian regions in the past, present and future: searching for the ways of the sustainable development" on the basis of UNESKO department of the Academy of the management "TISBY" (Kazan, Tatarstan).
7. To recommend to hold the congress of the UNESKO art and art education departments on the initiative of UNESKO fine art and architecture department of the Russian Academy of Arts.

Resulting document of the round table on "Solutions to environmental problems for sustainable development; UNESCO Chairs' activity"

18 September 2009, a round table meeting "Solutions to environmental problems for sustainable development; UNESCO Chairs' activity" took place within the International UNESCO Chairs Congress on Sustainable Development

The meeting was attended by representatives of UNESCO Chairs for ecological aspects of nature management and environmental education from the countries that took part in the Congress of UNESCO Chairs on Sustainable Development.

Upon hearing and discussing reports and presentations on ecological aspects of nature management, public administration in the area of environmental protection and ecological safety, UNESCO Chairs' activities in the ecologization of education, the participants of the round table noted that the preservation of natural systems and improvement of environment are inseparably related to social well-being of societies and sustainable development of regions. It is only possible to efficiently address ecological problems if this effort is based on an integrated approach within an entire economic system.

The human right to a sound environment is the main foundation for ecological education. Ecological education is needed to form of a truly humane attitude to nature, to determine the admissible measure of nature transformation and standards of behavior that would allow for the mankind to further exist and develop. In the contemporary context special attention should be paid to highlighting the relation between ecological education and public health and life quality, geographic and climatic conditions of regions. In this regard, the activity of UNESCO Chairs is especially important.

The round table participants emphasize:
- The growth in the consumption of natural resources leads to negative changes in the quality of environment. The key problems that determine the aggravation of ecological situation are: the shortcomings in the environmental policies; legal loopholes in the field of environment protection and sound natural resources management; lack of a technique for the integrated assessment of damage to the environment caused as a result of industrial development; application of inadequate technologies for environmental rehabilitation.
- The low level of available information on natural and man-induced dynamics of natural ecosystems against

the background of the global climate change, particularly with regard to the role of marsh ecosystems in supporting the ecological equilibrium as a basis for sustainable development of one of the marshiest regions on the planet.
- Insufficient development of partnerships between research centers and UNESCO Chairs dealing with environmental dynamics and global climate change.
- The need to improve training and retraining of environmental policies personnel, to disseminate the experience of UNESCO and other international organizations dealing with ecology and nature management.

Based on the discussion of reports and presentations the round table participants have developed the following recommendations which we propose to include into the resolution of the Congress of UNESCO Chairs:
- Promote the development of scientifically grounded criteria of sustainable regional development in the conditions of growing man-caused impacts.
- Use international field stations to organize long-term biospheric functions of marsh ecosystems.
- Recommend to create a coordination center of the international network of UNESCO Chairs and research centers dealing with environmental dynamics and global climate change to be based at the UNESCO Chair of the Ugra State University.
- Facilitate the expansion and deepening of the activities of biosphere reserves and specially protected natural areas of various levels, research and monitoring of global changes with the use of state-of-the-art equipment and information technologies, step up the activity of biosphere reserves and specially protected natural areas as training centers providing ecological education for sustainable development.
- Support the development of educational programs in the field of ecology and environment protection at UNESCO Chairs, improvement of education quality and academic level of teachers, young scientists and students by creating conditions for conducting field studies and involving them into research projects; provide international internships and opportunities to study abroad.
- It is recommended that UNESCO Chairs promote qualification improvement in the field of environment protection and ecological safety for decision makers in charge of economic or other activities that have, or may have, a negative impact on the environment (regional and local authorities, lawmakers, CEOs of industrial enterprises and commercial entities).

EABRN Activity Report

Jayakumar RAMASAMY
UNESCO Office in Beijing

Introduction: The Twenty Seventh (1993) General Conference of UNESCO, adopted draft resolution proposed by the Republic of Korea and supported by several Member States such as Australia, China and Indonesia, and called upon UNESCO Member States of Asia Pacific to strengthen cooperation in the implementation of the Action Plan for Biosphere Reserve.

In response to the General Conference invitation, during 1994 a Cooperative Scientific Study of East Asian Biosphere Reserves was launched by East Asian Members States, namely the Democratic People's Republic of Korea (DPRK), Japan, Mongolia, People's Republic of China (PR China) and the Republic of Korea (ROK) in cooperation with the UNESCO Offices in Jakarta and Beijing and the Man and the Biosphere (MAB) Programme Secretariat at UNESCO, Paris. As part of this Cooperative Scientific Study, two technical meetings of representatives from participating East Asian Countries were held during 1994.

At the second meeting held in Changbaishan Biosphere Reserve of China, representatives from DPR Korea, Japan, Mongolia, PR China and RO Korea unanimously agreed to formalize the establishment of the East Asian Biosphere Reserve Network (EABRN). A statute for the sub-regional network has been prepared by UNESCO and approved by the EABRN member states. During 1998 an official request to join EABRN was submitted by MAB Committee of Russian Federation to UNESCO and was welcomed by the EABRN member states.

10th EABRN Meeting: The 10th Meeting of UNESCO-MAB East Asian Biosphere Reserve Network (EABRN-10) was held in the Terelj National Park and Ulaanabaatar, Mongolia from 1st to 5th of September 2007. This meeting was held in the Biosphere Reserve of Mongolia upon the proposal from Mongolian participants and consultation with the member states during the EABRN-9 meeting (30 August – 3 September 2005 in Jeju Island) and it was hosted jointly by Mongolian National Commission for UNESCO, MAB National Committee of the Mongolia, Ministry of Nature and Environment of Mongolia, and UNESCO Office in Beijing, financially supported by the Ministry of Environment of RO Korea.

The Meeting brought together around 60 participants including delegates and experts from six EABRN member countries as well as representatives of UNESCO MAB, SACAM (South and Central Asia MAB Network), National/International NGOs (IUCN, ARC) and religious leaders from Buddhist Monastery.

The main theme of the meeting was “Protection of Sacred Natural Sites: Importance for Biodiversity Conservation.” There was six technical sessions in total, ranging from country case studies and other technical sessions related to sacred natural site concepts on biosphere conservation. Those sessions aimed particularly to achieve the following objectives:

- Exchange information and experiences on conservation and management of biosphere reserves and other similarly managed protected areas in the East Asian countries in light of the Seville Strategy and multi-functions of the biosphere reserve;
- Discuss the cooperative projects for Protection of Sacred Natural Sites in Biosphere Reserve Management;
- Review and update EABRN activities on its priority issues;
- Elaborate an activity plans for EABRN cooperation for the period of 2008 - 2009.

One day field visit with particular focus on Sacred Natural Sites concept was organized in the Bogd Khan

Biosphere Reserves and participants were given opportunity to observe the praying ceremony and Mongolia's famous Naadam Festival at the Bogd Khan Sacred Mountain.

UNESCO Beijing organized an Ad-Hoc meeting with representatives from the MAB National Committees of the six member states, Korean National Commission for UNESCO, UNESCO MAB and SACAM. During this meeting, the following issues related to EABRN project activities were discussed: the next EABRN meeting venue, the 3rd EABRN training course in 2008, EABRN atlas development, and preparation for the 3rd World Congress of Biosphere Reserves.

On the final day, declarations from all the participants were emerged in the Terelj Statement which is included in the report. The participants of the 10th EABRN Meeting expressed their gratitude to the Mongolian National Commission for UNESCO, Mongolia-MAB Committee and the Ministry of Nature and Environment of Mongolia for hosting the meeting. They also extended their thanks to the Ministry of Environment of the Republic of Korea for its continued professional and financial supports to the EABRN and to UNESCO Office Beijing for its coordination.

Small Scale Projects: Development of Policy Guidelines to Socio-Economic Governance of Biosphere Reserves-Case Study of Tianmu Mt. biosphere reserves in China. The project resulted in evaluating the following:

The role of local government and its management function; Benefit chain among tourism management department; Local resident's right of ownership on land.

Bio Gas Plant at BRs: This project is aimed to develop biogas-generating pits in the buffer zone of Chebaling Biosphere Reserve as a pilot which can help local people to reduce the use of firewood as fuel. The residue of biogas-generating pits can be used as ecological fertilizer for farming, it also can help local people to reduce the use of chemical fertilizer to better protect the biosphere reserve.

Carried out filed survey based research on "Inventory and Impact Assessment of the Alien Species of Plant", DPR Korea: Today, the worldwide expansion and invasion of alien species, together with habitat destruction, is one of the most threats for the global biodiversity conservation which plays important role in eco-environmental protection and sustainable economic development. In particular, the invasive alien species causes considerable impacts not only on biological diversity but also on eco-environmental and socio-

economic sectors including agriculture, forestry, and human health. In addition, today's expansion of trade and tourism due to the rapid increase of worldwide population and economy enables the risk of the expansion of alien species.

The conferences of parties to the Convention on Biological Diversity prepared the "Global Strategy for Plant Conservation", the 1st Target of which stipulated the preparation of the widely accessible working list of known plant species, as a step towards a complete world flora (Decision VI/9) and concerned the significance of the invasion interception of and reasonable control on the alien plants that threats ecosystem, habitat and species in the decisions V/8 and VI/23.

DPR Korea, situated in the southeast of Eurasian continent, is a peninsular with 80% of mountainous areas and stretching from north to south at length. These peculiar bio-geographical characteristics had made our country an "immigration corridor" of many biological species in the past that enabled the introduction and settlement of many alien plant species. Under the concern and support of the government, the preparation of plant resource inventory has been conducted by the Institute of Botany of the State Academy of Sciences with other relevant institutions, and as a result "The Flora of Korea"(volumes 1~10) has been published.

However the "The Flora of Korea" and other references addressed alien plant species only at the range as same as the general element species of Korean flora without their independent inventory, and moreover little of their impact on eco-environment and economy has been assessed. The current project on the inventory and impacts of alien plants in DPR Korea with the financial support from UNESCO was based on the data collected in the northern half of the Korean Peninsula and dealt mainly with seed plant, due to the information lack on southern part by the division of the country. The book published within the project will attribute to the regular monitoring and reasonable control on alien plant species, to proper impact assessment of them on environment and economy and to enhance the understanding and awareness of officials and general public on alien species so as to manage sustainably the precious plant resources of the country.

EABRN Atlas: Overview: The EABRN Biosphere Reserve Atlas is a follow up of the recommendation from the 9th EABRN ad-hoc committee meeting held during August-September 2005 in Jeju Island, the Republic of Korea. Shared among the members of the EABRN was a strong desire for information exchanging at the regional level, which in turn led to the designing of an Atlas to represent and illustrate the Biosphere Reserves in each member country. It was also agreed that a common Atlas should be produced in order to popularise and inform the general public about the Biosphere Reserve concept, in particular to school children.

The preparation of the Atlas has been carried out in a phased manner subject to the availability of funds. The EABRN Secretariat shall prepare the detailed plan. During the first phase, it was decided to carry out EABRN Atlas for China and Mongolia followed by other members of EABRN.

The designation of a biosphere reserve is not only a recognition of significant natural values, but representation of a commitment on the part of government agencies at all levels and all local interests to create living examples of conservation and sustainable development.

The main objectives of this atlas are:
- to transform complex data into easily readable information for the general public and school children, and
- to increase the knowledge of teachers, school students and community on Biosphere Reserve Sites (BRs) under the World Biosphere Reserve Network (WBRN) within the context of sustainable development, stressing the importance and components of BRs and ecosystems.

During the first phase the EABRN BRs Atlas for China, Mongolia and DPRK were completed and during the

second phase it was possible to complete Atlas for Japan.

This concept of Biosphere Reserve Atlas is very well received at the international level; the copies of this Atlas were shared with all the EABRN Members and all MAB National Committees through UNESCO Office network, as well posted in the website for download.

Japan: In addition to the Biosphere Reserves Atlases of China, Mongolia and DPRK, Japan published EABRN Biosphere Reserve Atlas, Japan in 2008. This atlas included concise background introduction of biosphere reserves, EABRN, Japanese national committee for MAB and the biosphere reserve network in Japan. The background introduction part unveiled information on the achievement, barriers, gaps, functions and significance of biosphere reserves, biosphere reserve related activities and biosphere reserve management in Japan. Furthermore, this atlas provided in introduction and maps of the four Biosphere Reserves in Japan. To elaborate, this atlas included satellite images, topographic and geological maps, vegetation maps as well as the land use and population maps of these four biosphere reserves. Particularly, this atlas included flora and fauna part for each biosphere reserve, in which vivid pictures accompanied by explanation of the key and representative species of biosphere reserves were presented.

Published in both English and Japanese, this Atlas serves as an excellent educational tool for a wide range of people, including policy makers, site managers, universities and schools. Additionally, it greatly enhances knowledge sharing on Biosphere Reserves within the EABRN. Furthermore, it will significantly contribute to the goal of the Madrid Action Plan for biosphere reserves (2009-2013) in the exchange of educational resources for wide spread adaptation. Especially, biosphere reserves serve as learning sites for sustainable development in the framework of the United Nations Decade of Education for Sustainable Development (2005-2014). The atlas is expected to contribute to raising awareness and understanding of biosphere reserves and the values and importance of conservation and sustainable development. All published EABRN BR Atlas are available at EABRN web page for free download.

3rd EABRN Training Course on "Remote Sensing and GIS for Biosphere Reserve Management to Adapt Climate Change": During the 10th EABRN Meeting the Members of EABRN met and discussed about the achievements and the importance of the previous two training programme. It was decided to continue the capacity building and to include the Impact of Climate Change with the advance technology applications to Biosphere Reserve Management. UNESCO Office Beijing extended financial contribution for organizing this training course under Korean Funds in Trust Agreement for EABRN to experts from EABRN member countries. In collaboration with the Centre for Earth Observation and Digital Earth (CEODE), Chinese Academy of Sciences (CAS), and Chinese National Committee for MAB the project secretariat organized the 3rd EABRN training workshop in Beijing, China.

The design of the training course took it into consideration that most of the participants have little background of RS and GIS. The training workshop covered the basic concept of RS and GIS, theory introduction, application of RS and GIS in related field, virtual reality and digital earth-construction of digital biosphere. SuperMap and ERDAS software were applied in the training. Participants were provided an opportunity to work with the Remote Sensing and GIS software with sample data set. Seventeen PC were provided to the seventeen participants, and networked to each other to demonstrate live demo of software and the participants were able to practice using the software applied in the course.

This workshop held for two consecutive weeks and illuminated the basic principles of Remote Sensing and GIS technology; discussed Remote Sensing and GIS application and data handling for biosphere reserve management and climate change; introduced Remote Sensing data reception, airborne Remote Sensing image processing for BRs and practical application of GIS in Biosphere Reserve Management case study from

China. Experts from Leica Geosystems Trade (Beijing) Co., Ltd. and SuperMap Software Co., Ltd. provided technical support to this training workshop. Seventeen trainees from six countries participated in this training workshop.

This workshop will help biosphere reserve managers to apply remote sensing and GIS tools to biosphere reserve management; to develop the scientific base and infrastructure to support ecosystem models; to improve climate forecasting. This will further help EABRN member states in developing their strategies for incorporating biosphere reserve protection into climate change mitigation and adaptation.

Picture from the opening ceremony of the 3nd EABRN Training Course
Outreach for EABRN included a dedicated web site with all reports and meeting documents available for download, published an information brochure for EABRN Network with information from all the members.

Lecture and practice of SuperMap and ERDAS software

Appendix

Wuyishan Statement

The 11th Meeting of UNESCO East Asian Biosphere Reserve Network (EABRN)
Wuyishan Biosphere Reserve, China 10-15 November 2009

In Wuyishan Biosphere Reserve, China, 47 representatives of the East Asian Biosphere Reserve Network from Six East Asian Member Countries (China, DPR Korea, Japan, Mongolia, RO Korea and Russian Federation) as well as various experts from the Government of China, representatives from SeaBRNet (Indonesia and Vietnam) and representatives of UNESCO Offices (Beijing, and Tehran) met, discussed the main theme of the 11th EABRN meeting on "Implementation of MAB's Seville Strategy and Madrid Action Plan for Biosphere Reserves" and presented country reports on biosphere reserves activities. They also discussed various issues related to the East Asian Biosphere Reserve Network.

Resulting from an intensive and interactive process, the participants:

Extended special thanks and appreciation to the host of the meeting, the Wuyishan Biosphere Reserve, Chinese MAB National Committee and Chinese National Commission for UNESCO; they also extended their appreciation to the Ministry of Environment of the Republic of Korea for its continued professional and financial support to the EABRN and UNESCO Office Beijing for its concerted coordination;

Underlined the urgent need for the exchange and transfer of information and the sharing of experiences on Biosphere Reserve management among six member countries through their National Committees for MAB, relevant national partners, biosphere reserves managers by following the successful experience of each other and EABRN Web Portal;

Called upon UNESCO and EABRN Secretariat to come up with biosphere reserve periodical review / field evaluation guidelines, and invited EABRN members to make constructive comments on biosphere reserve management, as the field evaluation of a biosphere reserve remains to be a key element in EABRN Meetings;

Called upon the MAB Secretariat to enhance its technical support for the submission of new UNESCO-MAB Biosphere Reserve nominations including Transboundary Biosphere Reserves (TBRs) through the EABRN Secretariat;

Committed themselves to develop transboundary and site-to-site cooperation for the conservation of biodiversity, and special attention to endangered, migratory species and their habitats more actively in the region;

Called upon the EABRN Members and Secretariat to further strengthen its partnership with other related bilateral and multilateral organizations and institutions in the fields of biodiversity conservation and sustainable development in order to explore the possibility of regional projects and technical cooperation;

Called upon the EABRN Secretariat to coordinate the priority activities with other sub-regional and regional MAB networks for cooperation and information sharing;

Recognized and appreciated ongoing collaboration between UNESCO and IUCN regarding the recognition of the biological and cultural values includes sacred natural sites

Agreed to encourage more participation of biosphere reserve managers in EABRN meetings

Called upon the EABRN Secretariat to contact member countries about possibilities to prepare an East Asian landscape convention to be considered and reviewed as a framework convention on environment protection for sustainable development of East Asia.

Called upon the EABRN Secretariat to mobilize additional funding for capacity building workshop, network meeting and other activities of EABRN from all member countries, private companies and other donors

Agreed on the following decision of Ad-Hoc Committee meeting of EABRN Members

Possible venue of 12th EABRN meeting:

- In line with the rotation principle, the next meeting of the EARBN should be held in the DPRK. The DPRK MAB Committee delegates will consult the National Authorities and inform its decision to the EABRN secretariat about the possibility of organizing the 12th EABRN meeting.
- In addition Republic of Korea offered to organize 12th EABRN meeting at Shinan Dadohae Biosphere Reserve with the possible focus on Implementation of Madrid Action Plan for Island and Coastal Biosphere Reserves with other sub themes such as work on Quality Economics etc.
- The Secretariat has been requested to work out the possibilities having a joint meeting with SeaBRnet. Secretariat will consult Jakarta Office who coordinate the SeaBRnet for possible such action

4th EABRN Training:

- Importance of capacity building of Biosphere Reserve managers and young scientists was recognized as one of the main priority in implementing MAP and continue the same with Chinese Academy of Sciences and other member states
- The main proposal is to organize study of Biological consequences in the event of Climate Change and growing impacts of alien species in cooperation with International Union of Biological Sciences and Chinese Academy of Sciences
- In addition the EABRN secretariat has been requested to contact the trainees of previous EABRN Training courses and get evaluation report from them about the utilization of their training and prepare a consolidated report for possible submission to the next EABRN meeting
- More strict screening process applying applicants selection should be employed for better communication of the training
- The EABRN Project Secretariat has been requested to continue the second phase of BRs Atlas for RO Korea and Russian Federation.
- There has been a request from the members to EABRN secretariat to update regularly a list of events related to biodiversity and other main priorities of EABRN and circulate to all members and experts within EABRN region in a quarterly basis
- All the members are requested to provide the details of their activities to EABRN Secretariat

Contact information

Man and Biosphere Programme UNESCO (UNESCO-MAB)
UNESCO Office in Beijing
Jianguomenwai Waijiaogongyu 5-15-3, 100600
Beijing, China
Tel:010-65322828
Fax:010-65324854
Email: beijing.sc@unesco.org