

Wetlands The Heart of Asia

Asian Wetland Symposium 2008

22~25 June 2008. Hanoi, Vietnam



Issues and actions for the conservaion and wise-use
for the wetlands of Asia

Conclusions and recommendations form the Asian
Wetland Symposium 2008

Front Cover Page



WETLANDS THE HEART OF ASIA

Asian Wetland Symposium 2008

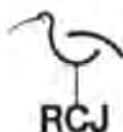
22-25 June 2008

Hanoi

Vietnam

Issues and actions for the conservation and wise-use
for the wetlands of Asia

Conclusions and recommendations from the Asian
Wetland Symposium 2008.



ACKNOWLEDGEMENT

This publication is a summary of the outputs of the fourth Asian Wetland Symposium (AWS 2008) held in Hanoi, Viet Nam from 22 to 25 June, 2008.

The AWS 2008 Secretariat would like to express its sincere appreciation to all sponsors and participants who contributed to the successful organization of the conference. A summary of the outputs and recommendations is incorporated into this publication. In addition, the DVD contained with this publication contains summaries of all the presentations and papers submitted during the AWS 2009. Special thanks go to the IUCN Water and Nature Initiative (WANI) for contributing the documentary, "Tales of Water: A Child's View".

Terms of Usage

The organizers of the AWS 2008 assume that use or reproduction of the material contained in this DVD-ROM, or any part thereof, for educational and non-commercial purposes is authorized without prior written permission from the copyright holders provided that the source is fully acknowledged. However, it is recommended that users contact the relevant author for reproduction of any material. Copyright for each presentation contained on this DVD-ROM is retained by the author.

Reproduction for commercial purposes is prohibited without prior written permission of the copyright holder.

Use of the logos of the MONRE, RCJ, IUCN and other co-sponsors is permitted solely for referential and non-commercial purposes.

Citation:

O'Callaghan. B.T. (2008) (ed). Issues and actions for the conservation and wise-use for the wetlands of Asia - Conclusions and recommendations from the Asian Wetland Symposium 2008.

Wetlands - The Heart of Asia

A symposium to reflect on the important of wetlands to the daily life of people in Asia and to examine the progress and challenges in wetlands management and conservation

Purpose of publication

This publication seeks to highlight the outputs of the Asian Wetland Symposium held in Hanoi, Vietnam, in June 2008. This publication has the following purposes:

1. Provide a history of the Asian Wetland Symposiums and the aim and purpose of the AWS 2008.
2. *The Hanoi – Call to Action* – on the following pages outlines the key priorities and recommendations from all the participants at the Asian Wetland Symposium 2008
3. *Summarize* the technical sessions of the Asian Wetland Symposium 2008

Background to the Asian Wetland Symposium

For the last 15 years the “Asian Wetland Symposium” (AWS) has provided a platform for those involved in the fields of wetland management, science and education to come together to discuss and share their experiences on wetlands in the Asian Region.

Previous AWS have been held in 4 countries in Asia. These previous symposia have brought together thousands of stakeholders and contribute to the dialogues on wetland “wise-use” realizing that Asia has a special relationship with its wetlands. The past AWSs have focused on various themes related to wetland conservation and management, with a special focus on environmental education and wetland “Wise-use”.

History of the “Asian Wetland Symposium”

1992: Otsu & Kushiro, Japan
2001: Penang, Malaysia
2005: Bhubaneshwar, India
2008: Hanoi, Vietnam

Initially, the AWS was organized to increase the level of awareness of the Ramsar Convention and associated wetland related issues. However, also over the last 15 years there has been the beginning of an increase in awareness of the Ramsar Convention in Asia, resulting in a change in orientation for the AWS to focus more on wetland management related issues while recognizing that education and awareness of crucial in the longer term management of wetlands in Asia.

Asian Wetland Symposium – Recognized as important in the Asian Region

The Parties to the Ramsar Convention recognize the importance of AWS. In the last meeting of Parties to the Ramsar Convention, the Contracting Parties passed Resolution IX.19 which,

“requests Contracting Parties, in cooperation with the Ramsar Secretariat and international NGOs, to facilitate the support to and participation in the Asian Wetland Symposia by a wide range of stakeholders, including but not limited to local governments, NGOs, the private sector, and local communities...”

Asian Wetland Symposium 2008

Wetlands – the Heart of Asia

The 2008 symposium was the fourth Asian Wetland Symposium building on the previous symposia that successfully brought together thousands of stakeholders to identify priorities in wetland management in Asian and to provide guidance to the Conference of Parties to the Ramsar Convention.

The theme for AWS 2008, "Wetlands – the Heart of Asia," sought to reflect the importance of wetlands to the lives of people throughout Asia. Wetlands provide food for the majority of people in Asia; with rice serving as a major part of the region's staple diet. Wetlands have spiritual and religious significance for Asian people and host a wide variety of plant and animal species that form an important component of global biodiversity. Asian countries, especially those in the South and the Southeast, are prone to natural disasters such as typhoons and tsunamis. Wetlands have proven to act as soft dikes to mitigate the impacts of these natural disasters. They will also be vital in facing the climate change challenges of today's world.

The Asian Wetland Symposium 2008 was attended by over 300 representatives from 24 countries in the Asian Region. There were over 50 presentations on the 10 focal thematic areas. In addition, there were stuffy tours to visit the urban wetlands of Hanoi and the Red River. The "Water Puppets" revealed the interconnectedness of the cultural heritage of Vietnam together with its wetlands.

One of the main outputs of the AWS 2008 was the "Hanoi Call for Action" endorsed by all participants at the AWS. In addition, there were a number of specific recommendations that came out of the workshop discussion groups. These are highlighted on the following pages.

Partners in Asian Wetland Symposium 2008.

The three main partners in the AWS 2008 were:

- Ministry of Environment and Natural Resources, Socialist Republic of Vietnam responsible for the coordination of efforts towards the management of wetlands in Vietnam and focal agency for the Ramsar Convention.
- RCJ, Ramsar Centre Japan, a Non-Government organization based in Japan with international membership that is dedicated to promoting increased understanding of the "wise-use" of wetlands and the Ramsar Convention in the Asian region.
- IUCN – The International Union for the Conservation of Nature and Natural Resources – Vietnam Country Program that has been operating in Vietnam since 1984.

Supporters of AWS 2008

- Ministry of the Environment of the Government of Japan
- Keidanren Nature Conservation Fund
- Hokkaido River Disaster Prevention Research Center
- Wetlands International
- Sida (Swedish Agency for International Development Cooperation)
- Jica (Japan International Cooperation Agency)
- UNEP / South China Sea Project
- GTZ (Deutsche Gesellschaft für Technische Zusammenarbeit)

2008 Hanoi Call to Action on Wetlands: Heart of Asia

Wetlands are among the most productive ecosystems on the planet. In addition to supporting exceptional levels of biological diversity, the ecosystem services provided by wetlands contribute to natural disaster prevention or mitigation, poverty reduction, socio-economic development, and water and food security; positively contributing to human health and well-being. Wetlands in the Asia region, however, continue to be lost or degraded at an alarming rate. The UN Food and Agriculture Organization (FAO) reports, for example, that some 1,900 million hectares of mangroves – or about 25 percent of the 1980 area – have been lost during the last 25 years.

The 187 symposium participants from 20 countries recognized that the greatest challenge in Asia lies in the need for more effective and efficient governance structures and mechanisms at the international, regional, national and local levels to support wetland conservation and wise use. Equally, participants recognized the need to link development initiatives and biodiversity conservation goals in a coordinated and planned manner. Participants expressed particular concern about the threat to wetland ecosystems arising from the negative impacts of climate change, and recognized the need to continue to increase communications, education and public awareness about the value of wetlands, particularly within the development sector.

The Asian Wetland Symposium identified 10 urgent and immediate actions that should be taken to address these challenges, and calls on policy and decision-makers to give priority attention to these, and to ensure that the necessary resources are made available to support their implementation at the local, national and regional levels.

1. Restore degraded marine/coastal, freshwater and human-made wetlands so that they can continue to conserve biodiversity and provide the range of ecosystem services that contribute to human health and well-being such as food and water supply, water purification, climate and flood regulation, coastal protection, and recreational opportunities.
2. Develop and implement best practice approaches to agriculture (including aquaculture) in wetlands through the application of environment-friendly farming practices such as Integrated Pest Management, organic farming, waste treatment systems, and efficient water management.
3. Adopt an integrated, multidisciplinary approach to the development and implementation of tools and methodologies for wetland assessment, monitoring and management, such as wetland valuation, wetland vulnerability assessment, and river basin management.
4. Document, and disseminate information about traditional cultural practices and indigenous knowledge which contribute positively to the conservation and wise use of wetland resources, and where possible, incorporate these into the management of wetlands.

5. Identify integrated approaches for linking development goals and biodiversity conservation in order to achieve both improved local livelihoods and wetland protection. One approach could be to pursue wetland conservation and wise use actions through the Millennium Development Goals and Poverty Reduction Strategies.
6. Undertake further research on the impacts of climate change on wetlands, and make the findings widely available. Priority should be given to research on practical and effective adaptation and mitigation measures that can be taken at wetland sites, for example, with respect to coastal wetlands, identify measures in response to rising sea levels and natural disasters such as typhoons and cyclones. Mainstream climate change adaptation and/or mitigation strategies into wetland planning and decision-making.
7. Establish, review and strengthen institutional structures and mechanisms at the regional, national and local levels to support wetland conservation and wise use, including decentralized structures, public-private sector partnerships, and rights-based approaches.
8. Strengthen existing policy and legal frameworks to enable the meaningful and effective participation of all stakeholders in decision-making related to the conservation and wise use of wetlands; in this regard, priority attention should be paid to enhancing the involvement of marginalized groups such as women, and vulnerable groups such as the poorest of the poor.
9. Develop transboundary wetland agreements, or "twinning" and flyway networking arrangements as a means to enhance cooperation on shared wetland systems and species, and to promote peace.
10. Establish mechanisms to enable the effective transfer of knowledge and sharing of experiences on wetland conservation and wise use tools and approaches among wetland researchers, planners and decision-makers in Asia.

The 2008 Asian Wetland Symposium proposes that prior to the next Asian Wetland Symposium a review be undertaken of the progress with regards implementation of the actions identified above, and that a report on this be made available to advise the deliberations at that time.

The 2008 Asian Wetland Symposium was held in Hanoi from 22 to 25 June 2008, hosted by the Ministry of Natural Resources and Environment, Government of Viet Nam with support from the Ministry of the Environment, Government of Japan, IUCN and the Ramsar Centre Japan.

The organizers of the 2008 Asian Wetland Symposium seek the assistance of the Government of Viet Nam to convey this "*2008 Hanoi Call to Action on Wetlands: Heart of Asia*" to the forthcoming 10th Meeting of the Conference of the Contracting Parties to the Convention on Wetlands to be held in Changwon, Republic of Korea from 28 October to 4 November 2008.

Hanoi, Viet Nam, 25 June 2008

1. The Wetlands of Vietnam – Lakes, Rivers, Coasts and Deltas

Wetlands in Vietnam are known for their cultural significance and for their agricultural productivity - making Vietnam one of the largest rice exporting countries in the world. This technical session sought to highlight the status of wetlands in Vietnam and share lessons-learned of wetland management and conservation practices.

The presentations in the session focused on:

- Overview of wetlands and wetlands management in Vietnam
- National strategy for ecotourism development in wetlands as an effective tool for nature conservation, poverty reduction, and community development.
- Coastal wetland management through development of community-based ecotourism.
- Adoption of sustainable and profitable aquaculture practices in a lagoon in Central Vietnam
- Development of an integrated fire and water management approach for a Mekong Delta wetland

Issues for further attention

- 1) Vietnam is "a country of wetlands" - with diverse landscapes and high biodiversity. Wetland conservation and **coordinated** sustainable management is critical for socio-economic development.
- 2) A large portion of Vietnam's population resides in and around wetlands and their livelihoods rely on wetland. Improving livelihoods is a objective of wetlands management and should be integrated into public policy.
- 3) Climate change will have severe impacts on Vietnam, particularly related to sea level rise. Thus coastal wetlands and coastal communities are extremely vulnerable. Adaptation strategies to the impacts of climate change for the most vulnerable communities are needed.
- 4) Hydrological management is vital to the health of wetland ecosystems and appropriate water management is an effective tool to reduce the risk of wetland forest fires.
- 5) Community-based wetland ecotourism is an effective tool for biodiversity conservation, poverty alleviation and community development. A national policy framework should ensure sustainability and support effective implementation at the local level.

- 6) Policies and regulations need to be developed to define and guide the process of sharing responsibility and benefits in wetland resources protection and use for community-based and co-management mechanisms for wetland conservation (especially national parks and protected areas).
- 7) An urgent priority is continuing to increase awareness about wetland conservation for the public, wetland managers, and policy-makers.
- 8) Wetlands can act as "natural" wastewater treatment facilities. This important function should be recognized and a legal framework and suitable investments should be established to support the proper use of these natural facilities.

Recommendations and Conclusions

- 1) As climate change will affect all Asian countries, priority countries such as Vietnam must ensure that climate change and wetlands conservation be considered a priority issue.
- 2) Models of wetland management in Asia for developed, developing, and poor country contexts would be useful. These models could include;
 - i) management techniques for different ecosystems.
 - ii) government policy and legislative arrangements
 - iii) community participation in management processes
 - iv) responsibilities and benefit sharing
- 3) Development of appropriate policies on the regulation and implementation of Payment for Ecosystem Services (PES).

2. Cultural Heritage and Wetlands Management

Culture influences our actions and therefore is a factor in the loss and degradation of our wetlands. In order to promote the idea of culture as a tool in wetland conservation and management, the session established three objectives;

- (1) Clarify the use of culture in management and conservation.
- (2) Promote cultural values in wetland management.
- (3) Explore ways to use culture as a tool for sustainable wetland management.

It is recognized that in Asia there are very close links between the cultural heritage and wetland ecosystems. This relates to the growing of rice, production and religious aspects in many of the cultures in the Asian region. In this session, there were a diversity of presentations with over ten papers from 6 countries, including Vietnam, Japan, Nepal, India, Cambodia and Cameroon. The highlights of presentations and discussions included:

- Recognition that riverbanks, lakeshores and coastlines are the cradle of civilization and the origin of human culture – particularly in Asia. Rice paddies are part of the cultural heritage of Asia and from some of the largest wetlands in the world.
- Modern communication, media and information technologies are making a contribution to the world. However they are also leading to the erosion of indigenous knowledge.
- A comparative study in Japan and Cameroon shows that modern technologies of hunting and harvesting resources are an important causes of wetland loss and degradation.
- Cambodia has developed an innovative method of providing refuge to fish during the dry season.
- With the aim to integrate culture, conservation, and development, Vietnam is in the process of establishing a "Learning Laboratory" in the Mekong River.
- Integration of hard and social scientific methods has been successful in promoting fishing in rice fields in Cambodia.

Issues for Further Focus

- Preserving and transferring indigenous knowledge and practices to the next generation should be a priority sustainable wetland management programs.
- Advocacy is needed to promote culture as an engine for supporting livelihoods for local communities.

Recommendations and Conclusions

- Document, design, and disseminate indigenous knowledge and practices in wetland conservation.
- Conduct economic valuation of wetland ecosystem functions and services.
- More work is needed to find the balance between optimum production (agriculture and aquaculture) and the conservation of wetland resources

Session 3. Integrating Wetland Conservation into Development

Wetlands are a target for reclamation and socioeconomic development. Without an adequate understanding of wetland ecosystems, their ecological roles, functions, values, the current efforts being conducted to conserve wetlands for sustainable use, appropriate landscape design, and engineering techniques, the health of wetlands will be under threat. They will be degraded, converted, and subsequently lost.

This session compiled case studies from different sectors in Asia to reveal that eco-engineering concepts exist and are applicable for integrating wetlands conservation into development.

Summary

- "Water" is a vital component of wetlands. All kinds of wetlands are integral components of the landscape and river basins. The hydrological cycle links them together. Various human directly or indirectly impinge upon the hydrology, water quality, biodiversity and ecological processes of wetlands. Conservation and management of individual wetlands and their immediate surrounding areas are not adequate. The future of wetlands depends on our ability to adopt a holistic integrated river basin management approach.
- To lay the foundation for good wetland governance, mainstreaming wetland biodiversity conservation into national, provincial and local policy development, legislation, planning, decision-making, and management actions must be prioritized.
- The application of an ecosystem approach and holistic environmental impact assessments are vital to assess, mitigate and minimize the negative impacts of reclamation plans and development projects that take place in and around wetlands. Eco-friendly design, accounting for the multi-functional nature of wetlands is needed to ensure the maintenance and sustainable use of wetlands.
- Wetland ecotourism has become important. In order to maintain wetland health and minimize potential impacts of tourism activities on wetlands, co-management for sustainable ecotourism development and local communities' livelihood improvement is necessary. The establishment of local guide centers, educational and eco-tourism programs, and activities of local guide groups can help raise awareness of wetland values for both local people and tourists. It can also generate an increased income for local people.
- Wetlands are facing pressures from economic development activities. Wetland restoration and management plans must be based on a detailed study of hydrological changes, apply a soft-engineering approach, include wetland assessment and biodiversity monitoring programs.
- Restoration and rehabilitation of mangroves can effectively solve problems of aquaculture wastewater and enhance aquaculture production.

- Constructed wetlands based on integration of engineering and ecological components can effectively treat urban runoff.
- Urban wetlands perform a diverse range of valuable functions. The loss of urban wetlands will have a negative impact on urban inhabitants. Urban planning needs to consider the value of wetlands and linkages between wetlands and adopt a combined ecological and engineering perspective.

Issues for Further Focus

- Ways and means to encourage the integration of wetland conservation into development on a river basin scale.
- How to successfully promote mainstreamed wetland conservation into development planning, including policy formulation, legislations review planning, and program implementation at all levels of government.
- Determine a method to combine ecological and engineering scientific principles to formulate tools to improve sustainable wetland conservation. These include holistic integrated river basin management , high quality environmental impact assessments, wetland vulnerability mapping, wetlands assessment and land use zoning, eco-friendly infrastructure design, and wetland ecosystems monitoring schemes.

Session 4: Creating Healthy Wetlands

This session focused on the broad issues in creating healthy wetlands. These included Avian Influenza, potential disease hosts in wetlands, methods to improve degraded soil in wetlands, enhancing water quality, and the improvement of marine habitat for seagrass growth.

The session started with the keynote presentation entitled the *Avian Influenza and Wetlands*. Avian Influenza currently poses a serious threat to wetlands. A cure has yet to be developed and this virus can eliminate poultry in a very short period of time once a flock is infected. Although the disease has not caused substantial human death, the early warning and reporting of viral infestation is vital to preventing the spread of the virus.

Other presentations provided lessons on:

- Methods to improve a degraded coastal wetland soil through planting a tolerant plant, *Sessuvium portulacastrum* in degraded coastal areas in Vietnam to improve soil quality to make it suitable for growing mangroves. It was found that this plant helped improve the soil quality by improving several physical parameters of the soil.
- The wetland water quality also could be improved by using a wetland treatment system demonstrating the manipulation of few species of aquatic plants for retention times were able to improve selected water parameters.
- Methods for maintaining seagrass habitat recently had affected by eutrophication and habitat degradation mostly due to land reclamations were reviewed.

Summary

- Avian influenza is a real threat to communities living in and around wetlands. Serious efforts on the precautionary measures and early warning systems should be undertaken. This could include monitoring animals in wetlands is required for the early warning system of zoonotic diseases.
- The presence of alien mammals in wetlands requires special management considerations, especially to manage potential contact between humans and the alien animals as well as other wild animals. Precautionary measures should be promptly considered as these animals could become hosts for disease.
- Effective methods to improve wetland environment such as soil and water quality are available. Communication between researchers and stakeholders is necessary for the implementation of these techniques.
- Global and regional collaboration is vital to managing problems encountered in trans-boundary wetland management, in particular marine ecosystems.

Issues for Further Focus

- Early warning and preventive measures for zoonotic diseases.
- Implementation of techniques to improve wetland quality.
- Collaboration to restore or improve wetland ecosystem and health.
- Monitoring and management of animals (especially mammals) in high risks avian flyway wetlands.

Session 5: Trans-boundary Cooperation in Wetlands Management

The objective of this session was to determine the current extent of management cooperation on wetlands areas that encompass international borders to encourage nations to enter into formal legal agreements on joint management of border wetlands areas ("twinning") for the purpose of;

- (i) Coordinating joint wetland conservation programs,
- (ii) Enhancing the cultural value of wetlands especially to improve the quality of life of indigenous people,
- (iii) Promoting peace.

Six papers were presented at the session. These are on the transboundary Mekong River (East Asia); Sundarbans between Bangladesh and India and the Gokyo Lakes between Nepal and Tibet, China (South Asia) and the demilitarized zone between North and South Korea (North Asia). There was also a presentation on the East Asian-Australasian flyway partnership and linking local communities on wetland conservation through environmental education programs in China, Russia and the United States.

Summary

- Management cooperation between border wetland countries ranges from (i) cooperation in various management aspects to (ii) existence of some initiatives at the national level which could serve as the basis for cooperation, and (iii) no cooperation at all on account of military/security reasons.
- Existence of very useful flyway partnerships and use of environmental education to link wetland communities.

Issues for Further Focus

- Programs raising awareness among people in trans-boundary wetland areas on the advantages of joint management of trans-border wetlands.
- Strengthen existing national management institutions that can be ready for "twinning" agreements before establishing formal legal arrangements.

Recommendations and Conclusions

- Conduct an inventory of wetland protected areas along national borders.
- Review the adequacy of national legislation framework and institutional arrangements for the protection of wetlands.
- Adopt guidelines on transborder wetlands legal frameworks and cooperative agreements for the integrated management of transboundary wetlands. This requires (i) consistent management plans for each side of the border; (ii) joint working-level consultative committee, (iii) harmonized law enforcement regulations, and (iv) provisions for a sustainable financing strategy.

Practical management activities that could facilitate joint cooperative efforts include law enforcement, border crossing permits, customs clearances, regulations, search and rescue operations, local people/tribal communities concerns, wildlife disease prevention, and non-indigenous species introduction.

Technical session 6. Wetlands and Sustainable Agriculture

Wetlands perform many valuable functions, including flood control, water supply, water purification, erosion control, sediment trapping, nutrient retention and removal, chemical and organic waste processing, groundwater discharge and recharge, pollution control, and fish and wildlife habitat. Due to such functions, wetlands are among the most productive systems on the planet, especially for the provision of food and services.

Although these services are important to human beings, they have often been undervalued relative to the immediate payoffs of converting wetlands to other land uses. Wide range of agricultural pollutants damage wetlands, including artificial fertilizer residues, insecticides, herbicides, pesticides, farmyard waste, milk spillage, silage liquor, cattle and pig slurry, as well as drainage and reclamation.

In this session, papers describing good practices of sustainable agriculture based on wise management of wetland resources, the prior impact assessment and monitoring procedures, necessary supporting measures for desirable management, economic mechanisms and international cooperation were expected. Five presentations were delivered in this session.

Main points highlighted during the presentations

- Eco-friendly agricultural management mechanisms exist and should be promoted.
- Wet/deep water rice paddy is a traditional system that should be maintained.
- Ecosystem-based approaches and integrated management should be adopted for the management of all wetlands
- Local peoples' participation is essential in holistic wetland management
- Appropriate levels of financial support should be provided for sustainable wetland management.

Issues for Further Focus

- "Wise/sustainable use" concept should be promoted at all levels
- Public awareness towards participation in wetland management is vitally important in the longer-term management of wetlands
- Identify suitable financial mechanisms for developing countries through a financial compensation/direct payment or the establishment of a higher market price for wetland products that promote sustainable wetland management
- Further legal and administrative process to support sustainable wetland management in the region

Recommendations and conclusions

- Support the development and implementation of Environment-friendly farming practices - COP Resolution/Decision on Wise/Sustainable Use (Ramsar IX.1A, Annex A), Addis Ababa Guidelines (CBD VII/12, Annex II) and Ecosystem Approach (CBD VI/6)
- Public awareness: COP Resolution/Decision on Participation (Ramsar VII.8, VIII.36) and CEPA (Ramsar VIII.31, CBD VIII/6)
- Integrated management: COP Resolution on ICZM (Ramsar VIII.4)
- Identify economic incentives to support wetland conservation and management.

Session 7: Education for Wetlands

Changing people's attitudes regarding wetlands is a crucial element for developing approaches to sustainable wetland management across Asia. This should be done through generating awareness and environmental education among various stakeholders, particularly communities who live in and around these wetland areas. In particular efforts should focus on highlighting the importance of wetlands in the daily lives of all people through the provision of clean water, as a sink of carbon and as a source of clean air.

Summary of current approaches:

- Efforts are being made to make various stakeholders, such as students, teachers, communities, more sensitive to issues through different activities designed to educate them about wetland conservation.
- Folk art, origami, and other innovative methods are used to impart training.
- Wetland study centers have been established in schools in Kerala, India
- ISO certification helps increase environmental awareness among employees.
- Decentralized management of environment friendly activities should be promoted.
- New means of securing livelihoods should be imparted along with environmental education.
- Each letter in the word WETLAND represents an ecological concept.
- Importance of local based environmental education activities, either formal or informal, using local language and with participation of all stakeholders. In particular this includes government officers, teachers, local leaders, students, and volunteers.
- High levels of education should include a mandatory course in environmental education.
- Non Government Organizations are extremely important for initiating, mobilizing, and implementing environmental education activities.

Issues for further focus

- Educating industry and strengthening the public/private partnership.
- Wetlands education materials to be available on a website.
- Bottom-up approach and top-down approach to plan and implement environmental education programs.

Recommendations and conclusions

- Education to be imparted using wetlands as a system. The interrelatedness of various factors needs to be highlighted.
- Field based, hands-on activities need to be designed and disseminated for educating various communities.
- Education will remain an important aspect of wetlands management.
- Environmental education programs should determine the local-based problems in environmental education in order to determine their local focus.
- Introduction of environmentally sustainable campuses followed by specific programs.
- There should be a shift from environmental education to environmentally sustainable development.

Session 8. Wetlands and Sustainable Livelihood

Across Asia, mighty river systems such as the Ganges, the Brahmaputra, the Mekong and the Yangtze have created vast areas of seasonal floodplains and perennial wetlands. Great civilizations have thrived on these rivers and its wetlands. The livelihoods of millions across Asia depend directly on wetlands. The sustainable management of wetlands can directly contribute to poverty alleviation and help nations attain their Millennium Development Goals.

Summary

- Four papers were presented by authors from Nepal, Japan, and Indonesia.
- The Sustainable Livelihood Approach (SLA) can be used to understand how local communities utilize their assets to develop their livelihoods. SLA can be a tool for identifying the limitations and strengths of sustainable livelihoods.
- Participatory Rural Appraisal (PRA) is a useful tool to help understand how people value wetlands and can identify barriers to achieving sustainable livelihoods. It is important to follow up on drafted Community Action Plans. Livelihood opportunities need to be created through eco-tourism and skill development. Favorable legal policy measures and bottom up planning approaches are required in conjunction with conservation incentives.
- Massive awareness campaigns for sustainable wetland use along with livelihood diversification programs are important.
- Charcoal production is an activity that can contribute to the livelihoods of wetland communities, especially with the recent rise in oil prices. Coconuts provide an alternative source of charcoal. Community management should follow a silviculture system to regenerate mangroves. Ineffective government policy for mangrove management limits conservation efforts.

Issues for Further Focus

- Institutionalize the roles and responsibilities of the primary stakeholder groups.
- Create opportunities for alternative livelihood options for communities living in and around wetland areas.
- Identify and promote Innovative approaches to demonstrating appropriate management of wetlands in the Asian Region.
- Replicate best models and practices in the management of wetland areas.

Recommendations and Conclusions

- Improve and enhance linkages between biodiversity conservation and wetland management activities
- Rural livelihood improvement and biodiversity conservation should be implemented in a planned and coordinated way.
- Quality of life and wetland environment must be integrated in conservation goals.
- Equitable benefit sharing is required for sustainable livelihoods that depend upon wetland ecosystems.

Session 9 Wetlands and Biodiversity

This session sought to highlight the linkages between biodiversity conservation and wetland management. There were four papers in this session, covering topics ranging from fish diversity in the Caspian Sea of Iran, sea grasses from the South China Sea, wildlife in Kinabatangan Nature Reserve in Sabah, Malaysia, and otter conservation in India. The keynote speaker was Mr. Ali Afraei Bandpei, who outlined a two-year fish harvesting project from Iran. The paper reflected the commercial value of wetland resources and used an example from the Ramsar Convention Site of Ramsar, a town facing the Caspian Sea, one of the largest lakes in the world.

From the discussion, the following points were highlighted as priorities for further consideration:

- The vital importance of wetlands to the maintenance of global biodiversity continues to be recognized. The conservation of wetlands and their sustainable management will enhance opportunities for the protection and sustainable management of biodiversity contributing to global biodiversity conservation.
- Monitoring for change in biodiversity of wetlands requires the use of appropriate indicator species to provide information on the health of wetlands. Some examples of indicator species include endemic fish, sea grass habitats and wildlife.
- The biodiversity of wetlands also includes species that have a commercial value. The maintenance of the wetlands and their related biodiversity will also contribute to the maintenance of commercial fisheries stocks and other wildlife species that may have commercial values.

Issues for further focus

- The lack of scientific information on biodiversity needs to be addressed. Often research is dominated by work of those "flagship" species – with little known about other species. The research focus needs to be broadened out.
- However, it is recognized that iconic species provide an opportunity for the development of collaborative research efforts. These efforts should be promoted to enhance collaboration and cooperation amongst the various agencies and individuals undertaking biodiversity related research.
- Additional efforts should be placed on the communication between the various focal points for information and knowledge sharing and channeled towards addressing pressing global issues such as species extinction.
- Continued efforts need to be placed on the undertaking baseline and applied research on the biodiversity of wetlands, with a special focus on rare and endangered species.

Recommendations and Conclusions

- It is important that there is adequate funding allocated to the conservation of biodiversity. This includes funds for research, monitoring, active species management and species re-introductions as required.
- It is important that special attention is paid to those areas with unique and special habits and species, and that there are plans developed and implemented to manage these sites.
- It is important to develop and implement monitoring programs that not only focus on iconic species, but also pay attention to important taxons, such as fish, birds, algae, and aquatic plants.

10. Climate Change and Wetlands: Impacts, Adaptation and Mitigation

Introduction

It is recognized that the issue of climate change will have a critical impact on the future functioning of wetlands due to changes in seasons and changes in temperature and the hydrological regime.

Summary

In the session there were five presentations from the Philippines, Vietnam, and Bangladesh focusing on issues such as impacts, adaptation, and mitigation of climate change in relation to wetland areas.

The presentations highlighted a number of issues. These included community-based adaptation strategies in Agusan Marsh in the southern part of the Philippines and determined that institutional arrangements, such as gender relations, health, and finance, must be incorporated into long-term climate change adaptation strategies for the Agusan Marsh.

There were then two presentations on the impacts of climate change in Vietnam. Due to the country's unique geography, topography and development stage, it will likely experience many of the negative impacts of climate change. In addition, a presentation was provided on social vulnerability to climate and institutional changes. The country's vulnerability to coping with institutional changes coupled with the impacts of climate and weather extremes were introduced. In particular, Vietnam's economic renovation has created challenges within local communities resulting in varying abilities of individuals cope with the effects of climate change.

A presentation from Bangladesh highlighted an example of autonomous adaptation to climate change in the agriculture sector whereby farmers employed new agriculture practices to adapt to climate change challenges. In addition, a presentation was provided on the ten-month fire in a peatland area in Indonesia and how this contributed to haze and global climate change. The role of wetlands in climate change mitigation as well as international conventions that addressing global climate change was discussed.

Issues identified

The key issues identified in the session included :

- The will be severe impacts on wetland ecosystems from climate change. This will impact on the temperature, seasonality of water and result in changes in habitats within these wetlands.
- Countries like Vietnam and Bangladesh are two of the most vulnerable to sea-level rise in the World. It is important that vulnerability assessments are conducted as soon as possible to ensure that vulnerable communities are identified and plans are developed.
- The trans-boundary nature of climate change needs to be identified and a recognition of the impacts of burning and transboundary haze needs to be considered.

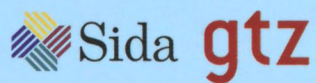
NEXT STEPS

Options for the next AWS are currently being considered by the International Steering Committee and partners.

Any feedback you can provide to the organizing committee will be considered for the preparation of the next AWS.

Asian Wetland Symposium 2008, International Steering Committee

1. Dr. Ajit K. Pattnaik (India), Nandankanan National Park
2. Amb. Amado S. Tolentino Jr. (Philippines), International Council of Environmental Law
3. Mr. Asae Sayaka (Thailand), Wetlands International
4. Mr. Bernard O'Callaghan (Vietnam), IUCN
5. Dr. Bishnu Bandari (Nepal), IUCN
6. Dr. Che Salmah Md. Rawi (Malaysia), Universiti Sains Malaysia
7. Dr. Desh Bandhu (India), Indian Environmental Society
8. Mr. Durga Prasah Dash (India), Pallishree
9. Prof. Gea-Jae Joo (Republic of Korea), Pusan National University
10. Prof. Hiroji Isozaki (Japan), Meiji-gakuin University
11. Mr. Kelin Chen (China), Wetlands International
12. Ms. Le Than Binh (Vietnam), Ministry of Natural Resources and Environment, Government of Vietnam.
13. Prof. Mashour Bin Mansor (Malaysia), Universiti Sains Malaysia
14. Dr. Motokazu Ando (Japan), Tokyo University of Agriculture
15. Mr. Naoki Amako (Japan), Ministry of the Environment, Government of Japan
16. Ms. Rebecca D'Cruz (Malaysia), Ramsar Scientific and Technical Review Panel, Ramsar Secretariat
17. Ms. Reiko Nakamura (Japan), Secretary General, RCJ
18. Mr. Sanowar Hossain (Bangladesh), Bangladesh POUSH
19. Dr. Sansanee Choowaew (Thailand), Mahidol University
20. Dr. Satoushi Kobayashi (Japan), Kushiho Public University
21. Dr. Taej Mundkur (India), FAO
22. Mr. Takayuki Musha (Japan), RCJ
23. Dr. Tatsuichi Tsujii (Japan), Wetlands International
24. Prof. Toru Iwama (Japan), Seinan-gakuin University and RCJ
25. Prof. Woo-Shin Lee (Republic of Korea), Seoul National University
26. Ms. Yasaman Rajabkhah (Iran), Ramsar Regional Center for West and Central Asia



The copies of the AWS 2008 Booklet and CD being delivered at Ramsar COP10 are produced with funding from Gyeongnam Ramsar Environmental Foundation.