

## Inland Waters: ASEAN's most threatened ecosystems

Inland waters as defined by the Convention on Biological Diversity are the aquatic-influenced environments located within land boundaries. It includes lakes, rivers, ponds, streams, groundwater, springs, cave waters, floodplains, as well as bogs, marshes and swamps, which are traditionally grouped as inland wetlands. The CBD has adopted the Ramsar Convention's definition of "wetland" which are "areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six meters." This ecosystem provides a variety of habitats to over 4,200 species in the region, and contribute the following services:

Provisioning Services	
<ul style="list-style-type: none"> <li>• Food</li> <li>• Fisheries and aquaculture</li> <li>• Human habitat</li> <li>• Timber &amp; non-timber products</li> </ul>	<ul style="list-style-type: none"> <li>• Medicines &amp; herbs</li> <li>• Gene pool</li> <li>• Biodiversity values</li> <li>• Pharmaceutical values</li> </ul>
Regulating Services	
<ul style="list-style-type: none"> <li>• Carbon storage</li> <li>• Adaptation to climate change</li> </ul>	<ul style="list-style-type: none"> <li>• Micro-climate function</li> <li>• Agriculture pest control</li> </ul>
Supporting Services	
<ul style="list-style-type: none"> <li>• Nutrient cycling</li> <li>• Run-off regulation</li> </ul>	<ul style="list-style-type: none"> <li>• Greenhouse gas regulation</li> </ul>
Cultural Services	
<ul style="list-style-type: none"> <li>• Transportation</li> <li>• Recreation</li> </ul>	<ul style="list-style-type: none"> <li>• Watershed</li> <li>• Tourism</li> </ul>

Source: Forestry Department. (2014). The 5th National Report to the Convention on Biological Diversity. Ministry of Industry and Primary Resources. Bandar Seri Begawan, Brunei Darussalam.



Actions directed at the conservation of inland waters in the ASEAN region are relevant to achieving Aichi Biodiversity



Targets on: reducing the rate of habitat loss (Target 5), sustainable and legal management and harvesting of fishery



resources (Target 6), reduction of pollution levels (Target 8), effective and equitable management of areas of



particular importance for biodiversity and ecosystem services (Target 11) and the restoration and safeguarding of



ecosystems and the services that they provide (Target 14).

However, these ecosystem services are often undervalued and gaps in resource governance result to putting the rich biodiversity resources found in these habitats at imminent risk.

### ASEAN's Inland Waters: A valuable resource

Inland waters support a rich aquatic biodiversity which occupies close to 2 million square kilometers in the ASEAN region, and this makes inland waters among the most diverse and productive natural habitats. Inland waters support several components of aquatic biodiversity including reptiles, amphibians, fish, mollusks, insects, other aquatic invertebrates, and water plants. Birds and several other migratory species in this region have a unique relationship with this ecosystem as it is among the areas used as staging or feeding sites along the path of their migratory routes.

The region's abundant freshwater resources receive 9.5 percent of the total global precipitation volume every year, and is endowed with 16.2 percent of the world's total renewable water resources. The average annual per capita water resource available

## Key Points

- **INLAND WATER** ecosystems in the ASEAN region occupy an area close to 2 million square kilometers.
- **HUMAN WELL-BEING** and those of ecosystems strongly depend on the vital ecosystem services that these provide. As inland water ecosystems supply the freshwater to irrigate crops, the agricultural sector is the major consumer of this resource using up 85.5 percent of the total water withdrawals, followed by the industrial sector (7.8 percent) and domestic sector (6.6 percent).
- A heightened commitment at the national level is necessary to establish a **REGIONAL AGENDA** that supports the alignment of social and political interests with responsible conservation governance of inland waters.
- An **ECOSYSTEM-BASED APPROACH** to management that considers appropriate scientific methodologies focused on essential structures, processes, functions, and interactions among organisms and their environment is needed for the restoration of ecosystems services.
- Increased interest in massive **REFORESTATION** with focus on riparian restoration is vital.
- Adopting a holistic, multi-disciplinary and multi-stakeholder approach to **POLICY REFORM** is necessary to strengthen existing laws and policies governing the management and sustainable use of the biodiversity and natural resources in this ecosystem.
- Further assessment of the **ECOLOGICAL** and **ECONOMIC VALUES** of inland water ecosystems to their respective economies and the people who depend on it for their livelihoods is important for the conservation efforts being done.

in the region is 12,980 cubic meters, a rate almost double the world average.

Inland waters are the main sources of irrigation for agricultural areas in the region. The agricultural sector consumes 85.5 percent of the total water withdrawals, followed by the industrial sector (7.8 percent) and domestic sector (6.6 percent). The well-being of ecosystems and humans strongly depend on the vital ecosystem services that these provide.

### Threats to ASEAN's Inland Waters

The complexity of the ASEAN's inland water ecosystems and their enclosed or semi-enclosed character renders them vulnerable to a wide range of threats. The ever-increasing food requirement of a growing ASEAN population influences the transformation and decline of inland waters and other wetlands of ecological importance in the region. Demand for areas to locate industry, business and tourism, land-based inputs, and agriculture and livestock wastes are on the rise. Dams and water management directed for intensive agriculture, though beneficial to the region's growing economy, also poses a threat to the conservation of species in this ecosystem.

Deficiencies in governance and management systems, lack of allocation of human and financial resources, as well as inadequate policy and political support add to the grave danger that this ecosystem faces. Gaps in the understanding of its interactions with other ecosystems render this ecosystem to be more vulnerable also.

### ASEAN's Response

It has been recognized that there is a need to have a clear understanding of the roles, functions, and ecosystem values associated with inland waters in the ASEAN. An issue-based strategic approach is one way to organize conservation efforts specially targeted for possibly the most threatened habitat in the region.

Prominent champions of inland waters conservation in the region are the Ramsar Convention and the East Asian-Australasian Flyway Partnership (EAAFP). The Convention's mission is the conservation and wise use of all wetlands through local and national actions and international cooperation, as a contribution towards achieving sustainable development throughout the world. At present, the region has 54 Ramsar sites covering 25,160 sq km (updated as of October 2018). In terms of coverage, Indonesia has the largest area (13,730 sq km), followed by Thailand (3,997 sq km), and the Philippines (2,440 sq km). To enhance efforts in streamlining procedures and processes including reporting and facilitating the data sharing amongst parties for this ecosystem's effective conservation, synergies have been formed between Ramsar's Strategic Goals and CBD's Aichi Biodiversity Targets.

The EAAFP, on the other hand, is recognizing internationally important sites which become safe havens for migratory waterbirds along the East Asian-Australasian Flyway.

Currently, there are a total of 15 network sites recognized in the ASEAN Region. The management of these sites demonstrates sound integration of wetland biodiversity conservation and sustainable development that benefits local communities. Effective management of internationally important sites, both within and outside the East Asian-Australasian Flyway network sites, is needed to conserve migratory waterbirds across the flyway.

### Call for Action

Addressing issues related to the conservation of inland water ecosystems contributes towards achieving Aichi Biodiversity Targets 4 through 14, including concerns related to species and habitat conservation, pollution, invasive alien species (IAS), sustainable production, and the conservation of essential ecosystem services.

### Recommendations

- Implement an ecosystem-based approach to the management of inland waters for the restoration of its ecosystem services.
- At the national level, strengthen the commitment to establish a regional agenda that supports the alignment of social and political interests with responsible conservation governance of inland waters. This is vital in managing land-based sources of threats. Actions which can be done include adequately sanctioning pollution violations, acknowledging and addressing sources of IAS, intensely protecting inland water biodiversity species and hotspots, and providing alternative means to those whose livelihoods are inextricably linked to inland water resources.

- At all levels of governance, increase the interest in massive reforestation with focus on riparian restoration. This is essential to address erosion issues caused by deforestation and reduce complications from impacts brought about by flooding and landslides. Such actions can be possible when national and local policies are aligned.
- Revisit national policies on pollution to ensure that these incorporate stricter criteria and impose stiffer sanctions on pollution loads, and are adequately supported with communication campaigns that assure compliance through improved understanding.
- Adopt a holistic, multi-disciplinary and multi-stakeholder approach to policy reform in the region to strengthen existing laws and policies governing the management and sustainable use of the biodiversity and natural resources in these areas. Programs and activities related to the implementation of these laws and regulations should be developed.
- The public needs to internalize the values and ecosystem services provided by inland waters, and be involved in conserving and restoring all forms of inland waters in the region.
- Further research is required in assessing the ecological and economic values of inland water ecosystems relative to AMS economies and the circumstances of people who depend on these ecosystems for their livelihoods. It is crucial to continuously apply the principles of communication, education, participation and awareness to improve regional capacities and enable stakeholders to take action for inland waters biodiversity conservation.

### References

- ASEAN Centre for Biodiversity (2017). ASEAN Biodiversity Outlook 2. Philippines.
- Department of Environment and Natural Resources-Biodiversity Management Bureau. (2014). The Fifth National Report to the Convention on Biological Diversity. Department of Environment and Natural Resources-Biodiversity Management Bureau and the Ateneo School of Government. Republic of the Philippines
- Hassan, R., Scholes, R., and Ash, N. (Eds.). (2005). Ecosystems and human well-being: current state and trends: findings of the Condition and Trends Working Group. The millennium ecosystem assessment series; v. 1 [chapter 20: Inland Water Systems pp 551 – 583, Retrieved from <http://www.unep.org/maweb/documents/document.289.aspx.pdf>
- Ministry of Environment and Forestry in Indonesia. (2014). The Fifth National Report of Indonesia to the Convention on Biological Diversity. Deputy Minister of Environmental Degradation Control and Climate Change, Ministry of Environment and Forestry. Jakarta, Indonesia.
- Ministry of Environmental Conservation and Forestry. (2014). Fifth National Report to the United Nations Convention on Biological Diversity. Nay Pyi Taw, Republic of the Union of Myanmar.
- Ministry of Natural Resources and Environment. (2014). Fifth National Report to the Convention on Biological Diversity. Malaysia.
- Ministry of Natural Resources and Environment. (2014). Vietnam's Fifth National Report to the United Nations Convention on Biological Diversity. Hanoi, Viet Nam.
- Ministry of Natural Resources and Environment International Union for Conservation of Nature. (2016). Fifth National Report to the United Nations Convention on Biological Diversity. Department of Forest Resources Management-MoNRE and Technical support: IUCN - Vientiane, Lao PDR.
- National Biodiversity Steering Committee. (2014). The Fifth National Report to the Convention on Biological Diversity. Kingdom of Cambodia.
- Ramsar Convention Secretariat. (2016). The Fourth Ramsar Strategic Plan 2016–2024. Ramsar handbooks for the wise use of wetlands, 5th edition, vol. 2. Ramsar Convention Secretariat, Gland, Switzerland.
- Royal Thai Government. (2014). Fifth National Report to the Convention on Biological Diversity.
- Writers:** Pauline Carmel Joy Eje, Sheila G. Vergara and Lauro S. Punzalan
- Infographic:** Eisen V. Bernardo



# Inland Waters: ASEAN's most threatened habitats



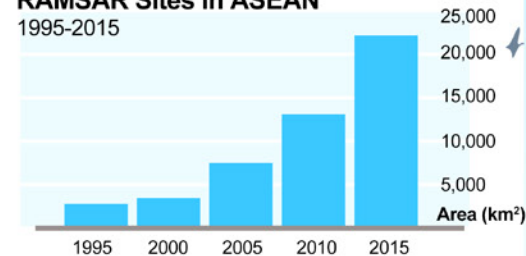
## Threats to ASEAN's lakes, rivers, and peatlands



Source: AMS' Fifth National Reports to the CBD

## RAMSAR Sites in ASEAN

1995-2015



## Ways Forward



Establish a regional agenda that aligns social and political interests with responsible governance of inland waters.

Increase interest at all levels of governance in massive reforestation to reduce erosion and impacts from flooding and landslides.



Assess the importance and total economic value of inland waters and their benefits to the economy and the communities directly dependent on these areas for their livelihood.

Strengthen policies and laws on the management and sustainable use of inland waters and their resources.



Implement information dissemination program for policy makers and the general public on the values of inland waters in coordination with ASEAN Member States.

Employ an ecosystem-based approach to management.



## ASEAN's Response

### AMS with policies on wetland conservation

- Indonesia
- Malaysia
- Philippines
- Thailand
- Viet Nam



25%

of the remaining tropical peat swamp forests in ASEAN are in designated protected areas.

Source: Biodiversity and Conservation of Tropical Peat Swamp Forests



8 out of 10 AMS are parties to the Ramsar Convention on Wetlands designating

54 Ramsar sites covering 25,160 sq km

(Updated as of Oct 2018)

Source: Ramsar Convention on Wetlands

